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THE DANGER ANGLE,

AND

OFF-SHORE DISTANCE TABLES.

CAPTAIN LECKY.

THE

DANGER ANGLE,

AND

OFF-SHORE DISTANCE TABLES.

BY

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187. a. 26.

TO THOSE AMONG

"THE TOILERS OF THE SEA"

UPON WHOM DEVOLVES THE SAFETY OF LIFE AND PROPERTY AFLOAT,

THESE TABLES ARE DEDICATED,

AS A TOKEN OF SYMPATHY WITH THEM IN THEIR MANY ANXIETIES

AND GREAT RESPONSIBILITIES,

AND AS A SMALL CONTRIBUTION TO

THE SAFE-GUARDS OF NAVIGATION.

INTRODUCTION.

The writer of these pages, strongly impressed with the practical utility of Tables giving, by simple inspection, a vessel's distance from any object of known height, after having first measured its altitude with a sextant, has been at no inconsiderable pains to get out and publish those herein contained.

The heights of all mountain summits, hills, islands, cliffs, rocks, towers, and lighthouses, have very properly become a subject of much importance in marine surveying, and but few elevated points are now laid down on the Admiralty Charts without having the heights annexed.

In 1854, the late Captain A. B. Becher, R.N., published "Tables of Mast-head Angles," for five feet intervals from 30 to 280 feet, and varying distances from one hundred yards to four miles. These very handy Tables were intended principally—as their title and range indicate—to enable ships of the navy sailing in company to keep station; also to ascertain distance in trials of sailing; though their author does not omit to call attention to the fact that they are applicable to many other useful purposes.

There are certain marked points of difference between Captain Becher's Tables and those now offered to the navigator, which it is as well to allude to. In the former the angles are computed for an arbitrary mile of 6,000 feet, and, for the particular purpose to which they are devoted, this is doubtless a convenient unit of length. In the present Tables—intended *exclusively* for navigational purposes —the Admiralty knot, or mean nautical mile of 6,080 feet, has been adopted; and on this basis the angles have been computed for heights from 50 up to 1,000 feet, and for distances from the tenth of a mile up to five miles, this latter being somewhat less than the distance of the sea horizon from an observer whose eye is elevated 20 feet above the water level. Further, to keep the Tables down to a reasonable size, the distances progress by tenths of a mile, without any intermediate yards, as in Becher's Tables: for purposes of navigation this is ample, and if the navigator so desires he may consider the tenths as cables without introducing any error. It will be seen, therefore, that there is no intention of cutting out the "Tables of Mast-head Angles;" both sets have their perfectly distinct and legitimate uses, to which each is best adapted. Provided with "The Danger Angle and off-shore Distance Tables," a vessel may with absolute safety—so far, at least, as *known* dangers are concerned—round a headland off which the chart shows sunken rocks or shoals, when no other mode of determining her exact distance from it might be available.

As a case in point, in the chapter on "The Danger Angle, and correct determination of distance from land," in the author's work entitled "'Wrinkles' in Practical Navigation," we read as follows:—

"To show the practical utility of this method, let us suppose that the navigator, for some important reason, such as meeting a crowd of vessels, is forced to round more closely than he otherwise would the Skerries Lighthouse, on the coast of Anglesea. He knows, however, that at three cables from it there is the hidden African Rock, which he had better pass at least two cables outside of to ensure safety; this makes in all five cables from the lighthouse. His chart gives the height of *the light* as 117 feet above the level of high water. Opening the Distance Tables, therefore, at 120 feet (since it is scarcely likely to be high water at that precise moment) he finds opposite five cables the angle 2° 17′ 26″. This, when corrected for index error, is placed upon the sextant, and so long as the angle subtended between *the centre of the lantern* and the water-line beneath it does not exceed this amount, he knows he is at or outside the prescribed distance. Attention is here called to the fact that the angle is measured *not* to the cowl or top of the lighthouse, but to *the centre of the glass lantern*, or, in other words, to a point representing the height of the focal plane of the light above the level of the sea."

If it be desired to measure from the extreme top of the lighthouse to its water-line, a small table, shewing the approximate number of feet to be added to the given height of the light, will be found with the Rule prefacing Part I.

When made use of to pass outside or between rocks, or thread an intricate channel, such as the entrance to the Port of Halifax, Nova Scotia, this method may be termed "Navigation by the *vertical* 'Danger Angle.'" For information concerning the *horizontal* "Danger Angle," the reader is referred to the work above quoted.

It must be understood that the Tables in Part I. are only available for such objects as lie *within* the observer's horizon, and whose distance does not exceed five miles. Their arrangement, being quite different to those in Part II., will distinguish them, and facilitate reference.

In 1856, Staff-Commander James M. Share, R.N.,* published "Tables for ascertaining a ship's distance from high land;" in these the curvature of the earth is necessarily taken into account, and they include distances from 4 miles to 112 miles, and heights from 100 feet up to 12,000 feet. Unfortunately, these valuable Tables did not become sufficiently known; the great majority of navigators—ignorant of their very existence—were thus debarred the advantages to be derived from their use, and the talented author failed to reap the reward of his labours. In Part II. the writer has computed a set of similar Tables, commencing where Captain Share left off, and extending to 18,000 feet.

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* **Captain Share is now on the Retired List, and having, in June, 1881, purchased some property at the Cape of Good Hope, he desires it to be known that his address in future is**

Devonshire Lodge, Camp Ground Road,
Rondebosch, near Cape Town,
South Africa.

It is obvious that they would be very incomplete without the lower numbers, but Captain Share has very generously allowed his own to be incorporated with them in such manner and to such extent as might be deemed advisable.

Availing himself of this permission, the writer, among other things, has pruned down Captain Share's Distances to 80 miles; firstly, because for elevations of 12,000 feet, 80 miles may be regarded as the outside *practical* limit in the common use of this method; and, secondly, because it is important to keep down the size of the book. In the extended portion, however, the increased height (18,000 feet) warrants the distances being given up to 100 miles.

In connection with this Part II., in the chapter already quoted, we read as follows :—"When a distant mountain peak is visible above the sea horizon, a ship's position may be fixed with a near approach to accuracy by measuring its 'on and off' altitude, and laying off, on the observed line of bearing, the corresponding distance taken out from the Tables by inspection. Or the compass may be dispensed with altogether if the astronomical bearing be found by a second observer in the manner indicated on page 254." * * * "When well out in the offing, known mountain peaks are frequently visible, and form salient features when the lower coast-line—indistinct through distance or haze—offers no points by which to get a 'fix.' This is very much the case on the coasts of Chili and Peru. Moreover, should a vessel be standing in from seaward to make her port, what a source of satisfaction it is to be able to define her *precise* position, and shape a correct course for it before the coast-line is even visible, and this with scarcely any trouble."

The labour of computing Part I. has been immense, and occupied spare moments extending over several years; indeed, it would not now be finished were it not for the kind and readily tendered assistance of some of the writer's officers, among whom may be mentioned Messrs. Edward M. Fawcett, Montague H. Morle, Andrew T. Mutton, and Harry Bocquet, as gentlemen to whom he is especially indebted. Each angle has been independently worked out by two different computers, and the results carefully and systematically compared. The angles were further checked by 'differences,' so that it is hoped but very few errors exist, and those of no practical importance. The calculations have been made to the nearest second of arc, and though this, perhaps, was unnecessary precision for the object in view, it made the Tables complete for any outside purpose. Only those who have done similar work can properly appreciate the toilsome care involved in such an undertaking; but the hope is cherished that a wide-spread recognition of the utility of the Tables may justify the expenditure of time and labour incurred in their production. During several years of sea service in many waters, the writer has been in the habit of using both Becher's and Share's Tables, and found them of signal assistance to him in various cases of critical navigation.

In the present little book the advantages of both Tables are combined, and presented in a more complete, and, at the same time, more compact form. It is not unlikely that some few will be found to raise objections to the method, on the score of its not being *rigorously* exact in practice: for example, in Part I., it may be said that the eye is never on the same level as the water-line of the observed object, that the water-line is seldom vertically below it, and that in consequence the triangle is not a truly right-angled one. All this is undeniable; but where the objects are judiciously selected, the error arising from these causes is totally insignificant; and it will only be necessary to remind such hypercritical individuals that navigation, regarded from *any* point of view, can lay no claims to being an exact science, and, from the nature of its belongings, it is useless to expect it ever to become so. In actual sea-going practice, the results of all its various problems are but approximate —some, it is true, less so than others, and it is for the navigator, guided by knowledge and experience, to choose the most fitting. It must not be imagined that this method of determining a ship's distance off shore is put forward as one so superior as to override all others: it is far from the writer's intention to convey such an idea: he merely advances it as a handy and reliable method when used with discretion, and one which affords a ready means of accomplishing its object when the local peculiarities are such as to render unavailable the more usual modes, namely, cross-bearings, horizontal angles, &c. As a check upon these it is invaluable. Vessels are constantly being lost through erroneous estimates of their distance from the shore, and anything tending to lessen this danger should be thankfully hailed by all concerned, especially where it has ease and simplicity to recommend it. When coasting, a vessel's position cannot be fixed too often or too accurately, since, as everybody knows, currents are uncertain, and fogs in some parts of the world shut down very rapidly. At such times the painstaking man, who has kept the run of his ship's place up to the last moment, experiences a comfortable feeling of security, and has a decided pull over another less watchful than himself. Moreover, close attention paid to fixing the ship's position affords a means of detecting current, bad steerage, or unknown error in the compass.

The author feels assured that when this excellent method becomes better known, it will meet with general approval. GIVE IT A TRIAL. The few trifling rules, with examples for the use of Parts I. and II., will be found at the beginning of their respective Tables.

S. T. S. LECKY.

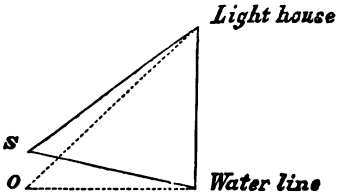
1, Morningside-road, Bootle, Liverpool,
April, 1882.

PART I.

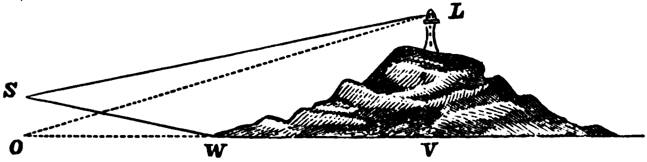
EXPLANATORY.

The Tables in Part I. comprise heights from 50 to 1000 feet, and distances from a cable's length (assumed as the tenth of a mile) up to five miles; they can only be used in connection with objects lying *within* the bounding line of the observer's horizon: for objects *beyond* the horizon Part II. has been calculated.

RULE.—Being desirous of ascertaining the distance from an object of known height, take its angular altitude from summit to water-line; then opening the Tables, run the finger down the column under the given height until the angle nearest to the one just measured is found; abreast of this, in the left-hand margin, will be found the required distance in nautical miles and tenths of a mile. When the object is near—say within a quarter of a mile—the observer should get as low down as possible, to lessen the error—small at any time—which would arise from his eye being above the level of the water-line to which the angle is measured.



S represents the angle as measured from the bridge, and *O* what it would be if measured from the sea level. Except, however, in very extreme cases, the difference is infinitesimally small; and as the angle at *S* is greater than the angle at *O*, the error lies on the safe side if the injunction to descend is disregarded, so long as there exists no near danger on the other side of the ship. For example, an observer being elevated 30 feet, and distant one cable from a *perpendicular* object 150 feet in height, the error in his position due to the above cause would be less than a foot.



This second case is one to be guarded against, as the error involved may be considerable, so do not use the method when it is evident the conditions are unfavourable. The diagram represents a ship passing a lighthouse or tower 400 feet high, standing on a hill say some two miles inland, whilst in the foreground at *W* is a low rocky point at a distance of half a mile. The angle *S*, subtended between *L* and *W*, is clearly too great, and in this case the excess is half a degree, equal to an erroneous distance of over half a mile; it ought to be measured between *L* and *V*, but as this is impossible from there being no way of ascertaining the whereabouts of the imaginary point *V*, the difficulty, when the case is not a bad one, is practically got over by descending to as near the point *O* as you can get. Sextants fitted with Davidson's spirit level attachment, giving an artificial horizon, would be very handy on such occasions; it would be merely necessary to subtract the height of the observer's eye from the given height of the tower, and, with the remainder, consult the tables for the distance as before. This would be accurate.

The words water-line and horizon must not be construed as one and the same thing. The horizon is the natural boundary line where the sea and heavens apparently meet each other, and its distance—a direct consequence of the earth's curvature—depends upon the elevation of the observer. To find it approximately, take the square root of the height of the observer's eye in feet for the distance in miles: thus the square root of 25 feet is 5, which would be about the distance in miles of the true horizon from an individual whose eye had that elevation above the sea level. The distance of an object's water-line, on the contrary, has nothing to do with the elevation of the observer.

If the object employed be a lighthouse, it is more correct to measure from the estimated centre of the glass lantern, which point may be taken to represent the height of the light as given on the chart or in the lighthouse book; but should the observer prefer to measure from the extreme top of the lighthouse, the subjoined table gives the approximate number of feet to be added to the given height:—

1st	order light,	from centre of	the light	to the vane, is *about*	15	feet.
2nd	,,	,,	,,	,,	11	,,
3rd	,,	,,	,,	,,	10	,,
4th	,,	,,	,,	,,	8	,,
5th	,,	,,	,,	,,	7	,,
6th	,,	,,	,,	,,	6	,,

On the Admiralty Charts all heights are given in feet above *High Water*, ordinary springs. Where there is great Rise and Fall, it must be allowed for, according to time of tide. When the height is prefixed by the word "*about*," it means that the height is, to some extent, uncertain; and in such cases common sense dictates that the method, if used at all, should be used with caution. In all the grand trigonometrical surveys which have been executed by various governments, the heights may be regarded as absolutely correct; and in the regular hydrographic surveys the accuracy might almost be said to be in excess of the wants of the navigator.

Example.

At Cape Frio, on the Brazilian coast, a sunken rock lies a cable's length to the southward of the light, which has an elevation of 300 feet above the sea level. Being desirous of passing five cables (or half a mile) from the lighthouse, what would be the angle?

Opening the Tables at page 18, under 300 feet, and abreast of $0^{\text{m}}\cdot5$, will be found 5° 38′ 9″, the required angle.

Table showing the distance of the visible horizon in nautical miles :—

Height of eye in feet.	Distance of visible Horizon in miles.	Height of eye in feet.	Distance of visible Horizon in miles.	Height of eye in feet.	Distance of visible Horizon in miles.	Height of eye in feet.	Distance of visible Horizon in miles.
	m.		m.		m.		m.
1	1·1	11	3·8	21	5·2	31	6·3
2	1·6	12	4·0	22	5·4	32	6·4
3	2·0	13	4·1	23	5·5	33	6·5
4	2·3	14	4·3	24	5·6	34	6·6
5	2·5	15	4·4	25	5·7	35	6·7
6	2·8	16	4·5	26	5·8	36	6·8
7	3·0	17	4·7	27	5·9	37	6·9
8	3·2	18	4·8	28	6·0	38	7·0
9	3·4	19	5·0	29	6·1	39	7·1
10	3·6	20	5·1	30	6·2	40	7·2

In calculating this table, atmospheric refraction is taken into account. Its effect is to increase the distance of visibility by *about* the twelfth part of that which is due to the earth's curvature alone.

PART I.

HEIGHTS FROM 50 TO 1000 FEET.

DISTANCES FROM THE TENTH OF A MILE TO FIVE MILES.

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.																	
	50 Feet.			55 Feet.			60 Feet.			65 Feet			70 Feet.			75 Feet.		
m.	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″
0·1	4	42	4	5	10	8	5	38	9	6	6	8	6	34	3	7	1	56
0·2	2	21	17	2	35	23	2	49	29	3	3	35	3	17	41	3	31	46
0·3	1	34	13	1	43	38	1	53	3	2	2	27	2	11	52	2	21	17
0·4	1	10	40	1	17	44	1	24	48	1	31	52	1	38	55	1	45	59
0·5	0	56	32	1	2	11	1	7	51	1	13	30	1	19	9	1	24	48
0·6	0	47	7	0	51	50	0	56	32	1	1	15	1	5	57	1	10	40
0·7	0	40	23	0	44	26	0	48	28	0	52	30	0	56	32	1	0	35
0·8	0	35	20	0	38	52	0	42	24	0	45	56	0	49	28	0	53	0
0·9	0	31	25	0	34	33	0	37	42	0	40	50	0	43	59	0	47	7
1·0	0	28	16	0	31	6	0	33	56	0	36	45	0	39	35	0	42	24
1·1	0	25	42	0	28	16	0	30	51	0	33	25	0	35	59	0	38	33
1·2	0	23	34	0	25	55	0	28	16	0	30	38	0	32	59	0	35	20
1·3	0	21	45	0	23	55	0	26	6	0	28	16	0	30	27	0	32	37
1·4	0	20	12	0	22	13	0	24	14	0	26	15	0	28	16	0	30	18
1·5	0	18	51	0	20	44	0	22	37	0	24	30	0	26	23	0	28	16
1·6	0	17	41	0	19	27	0	21	12	0	22	58	0	24	44	0	26	30
1·7	0	16	38	0	18	18	0	19	57	0	21	37	0	23	17	0	24	57
1·8	0	15	43	0	17	17	0	18	51	0	20	25	0	21	59	0	23	34
1·9	0	14	53	0	16	22	0	17	52	0	19	21	0	20	50	0	22	19
2·0	0	14	8	0	15	33	0	16	58	0	18	23	0	19	48	0	21	12
2·1													0	18	51	0	20	12
2·2													0	17	59	0	19	17
2·3													0	17	13	0	18	27
2·4													0	16	30	0	17	41
2·5													0	15	50	0	16	58

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	50 Feet.	55 Feet.	60 Feet.	65 Feet.	70 Feet.	75 Feet.
m.					° ′ ″	° ′ ″
2·6					0 15 14	0 16 19
2·7					0 14 40	0 15 43
2·8					0 14 8	0 15 9
2·9					0 13 39	0 14 38
3·0					0 13 12	0 14 8
3·1					0 12 46	0 13 41
3·2					0 12 23	0 13 16
3·3					0 12 0	0 12 51
3·4					0 11 39	0 12 29
3·5					0 11 19	0 12 7
3·6					0 11 0	0 11 47
3·7					0 10 42	0 11 28
3·8					0 10 26	0 11 10
3·9					0 10 9	0 10 53
4·0					0 9 54	0 10 37
4·1						
4·2						
4·3						
4·4						
4·5						
4·6						
4·7						
4·8						
4·9						
5·0						

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.																	
	80 Feet.			85 Feet.			90 Feet.			95 Feet.			100 Feet.			105 Feet.		
m.	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″
0·1	7	29	45	7	57	31	8	25	13	8	52	50	9	20	24	9	47	53
0·2	3	45	51	3	59	55	4	13	59	4	28	2	4	42	4	4	56	7
0·3	2	30	41	2	40	5	2	49	29	2	58	53	3	8	17	3	17	41
0·4	1	53	3	2	0	6	2	7	10	2	14	13	2	21	17	2	28	20
0·5	1	30	27	1	36	6	1	41	45	1	47	24	1	53	3	1	58	41
0·6	1	15	23	1	20	5	1	24	48	1	29	30	1	34	13	1	38	55
0·7	1	4	37	1	8	39	1	12	41	1	16	43	1	20	46	1	24	48
0·8	0	56	32	1	0	4	1	3	36	1	7	8	1	10	40	1	14	12
0·9	0	50	15	0	53	25	0	56	32	0	59	41	1	2	49	1	5	57
1·0	0	45	14	0	48	3	0	50	53	0	53	43	0	56	32	0	59	22
1·1	0	41	7	0	43	41	0	46	16	0	48	50	0	51	24	0	53	58
1·2	0	37	42	0	40	3	0	42	24	0	44	46	0	47	7	0	49	28
1·3	0	34	48	0	36	58	0	39	9	0	41	19	0	43	30	0	45	40
1·4	0	32	19	0	34	20	0	36	21	0	38	22	0	40	23	0	42	24
1·5	0	30	9	0	32	2	0	33	56	0	35	49	0	37	42	0	39	35
1·6	0	28	16	0	30	2	0	31	48	0	33	34	0	35	20	0	37	6
1·7	0	26	37	0	28	16	0	29	56	0	31	36	0	33	16	0	34	55
1·8	0	25	8	0	26	42	0	28	16	0	29	51	0	31	25	0	32	59
1·9	0	23	49	0	25	18	0	26	47	0	28	16	0	29	46	0	31	15
2·0	0	22	37	0	24	2	0	25	27	0	26	52	0	28	16	0	29	41
2·1	0	21	33	0	22	53	0	24	14	0	25	35	0	26	56	0	28	16
2·2	0	20	34	0	21	51	0	23	8	0	24	25	0	25	42	0	26	59
2·3	0	19	40	0	20	54	0	22	8	0	23	22	0	24	35	0	25	49
2·4	0	18	51	0	20	2	0	21	12	0	22	23	0	23	34	0	24	44
2·5	0	18	6	0	19	14	0	20	22	0	21	29	0	22	37	0	23	45

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	80 Feet.	85 Feet.	90 Feet.	95 Feet.	100 Feet.	105 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
2·6	0 17 24	0 18 29	0 19 35	0 20 40	0 21 45	0 22 50
2·7	0 16 46	0 17 48	0 18 51	0 19 54	0 20 57	0 21 59
2·8	0 16 10	0 17 10	0 18 11	0 19 11	0 20 12	0 21 12
2·9	0 15 36	0 16 35	0 17 33	0 18 32	0 19 30	0 20 29
3·0	0 15 5	0 16 1	0 16 58	0 17 54	0 18 51	0 19 48
3·1	0 14 36	0 15 31	0 16 25	0 17 20	0 18 15	0 19 9
3·2	0 14 8	0 15 1	0 15 54	0 16 47	0 17 41	0 18 34
3·3	0 13 43	0 14 34	0 15 26	0 16 17	0 17 8	0 17 59
3·4	0 13 19	0 14 8	0 14 58	0 15 48	0 16 38	0 17 28
3·5	0 12 56	0 13 44	0 14 33	0 15 21	0 16 10	0 16 58
3·6	0 12 34	0 13 22	0 14 8	0 14 55	0 15 43	0 16 30
3·7	0 12 14	0 12 59	0 13 46	0 14 32	0 15 17	0 16 3
3·8	0 11 54	0 12 39	0 13 24	0 14 8	0 14 53	0 15 38
3·9	0 11 37	0 12 20	0 13 3	0 13 47	0 14 30	0 15 14
4·0	0 11 19	0 12 1	0 12 44	0 13 26	0 14 8	0 14 51
4·1						
4·2						
4·3						
4·4						
4·5						
4·6						
4·7						
4·8						
4·9						
5·0						

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE. 110 Feet.	115 Feet.	120 Feet.	125 Feet.	130 Feet.	135 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
0·1	10 15 18	10 42 38	11 9 53	11 37 4	12 4 8	12 31 8
0·2	5 10 8	5 24 9	5 38 9	5 52 9	6 6 8	6 20 6
0·3	3 27 4	3 36 27	3 45 51	3 55 13	4 4 36	4 13 59
0·4	2 35 23	2 42 26	2 49 29	2 56 32	3 3 35	3 10 38
0·5	2 4 20	2 9 59	2 15 38	2 21 17	2 26 56	2 32 34
0·6	1 43 38	1 48 20	1 53 3	1 57 45	2 2 27	2 7 10
0·7	1 28 50	1 32 52	1 36 54	1 40 56	1 44 58	1 49 1
0·8	1 17 44	1 21 16	1 24 48	1 28 20	1 31 52	1 35 23
0·9	1 9 6	1 12 14	1 15 23	1 18 31	1 21 39	1 24 48
1·0	1 2 11	1 5 1	1 7 51	1 10 40	1 13 30	1 16 19
1·1	0 56 32	0 59 6	1 1 41	1 4 15	1 6 49	1 9 23
1·2	0 51 50	0 54 11	0 56 32	0 58 54	1 1 15	1 3 36
1·3	0 47 50	0 50 1	0 52 11	0 54 22	0 56 32	0 58 43
1·4	0 44 27	0 46 27	0 48 28	0 50 29	0 52 30	0 54 31
1·5	0 41 28	0 43 21	0 45 14	0 47 7	0 49 0	0 50 53
1·6	0 38 52	0 40 38	0 42 24	0 44 10	0 45 56	0 47 42
1·7	0 36 35	0 38 15	0 39 55	0 41 35	0 43 14	0 44 54
1·8	0 34 33	0 36 7	0 37 42	0 39 16	0 40 50	0 42 24
1·9	0 32 44	0 34 13	0 35 43	0 37 12	0 38 41	0 40 10
2·0	0 31 6	0 32 31	0 33 56	0 35 20	0 36 45	0 38 10
2·1	0 29 37	0 30 58	0 32 19	0 33 39	0 35 0	0 36 21
2·2	0 28 16	0 29 34	0 30 51	0 32 8	0 33 25	0 34 42
2·3	0 27 3	0 28 16	0 29 30	0 30 44	0 31 57	0 33 11
2·4	0 25 55	0 27 6	0 28 16	0 29 27	0 30 38	0 31 48
2·5	0 24 53	0 26 1	0 27 9	0 28 16	0 29 24	0 30 32

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.																	
	110 Feet.			115 Feet.			120 Feet.			125 Feet.			130 Feet.			135 Feet.		
m.	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″
2·6	0	23	55	0	25	1	0	26	6	0	27	11	0	28	16	0	29	22
2·7	0	23	2	0	24	5	0	25	8	0	26	11	0	27	14	0	28	16
2·8	0	22	13	0	23	14	0	24	14	0	25	15	0	26	15	0	27	16
2·9	0	21	27	0	22	26	0	23	24	0	24	23	0	25	21	0	26	19
3·0	0	20	44	0	21	41	0	22	37	0	23	34	0	24	30	0	25	27
3·1	0	20	4	0	20	59	0	21	53	0	22	48	0	23	43	0	24	38
3·2	0	19	27	0	20	19	0	21	12	0	22	5	0	22	58	0	23	51
3·3	0	18	51	0	19	43	0	20	34	0	21	25	0	22	17	0	23	8
3·4	0	18	18	0	19	8	0	19	57	0	20	47	0	21	37	0	22	27
3·5	0	17	47	0	18	35	0	19	23	0	20	12	0	21	0	0	21	49
3·6	0	17	17	0	18	4	0	18	51	0	19	38	0	20	25	0	21	12
3·7	0	16	49	0	17	35	0	18	21	0	19	6	0	19	52	0	20	38
3·8	0	16	22	0	17	7	0	17	52	0	18	36	0	19	21	0	20	5
3·9	0	15	57	0	16	41	0	17	24	0	18	8	0	18	51	0	19	35
4·0	0	15	33	0	16	16	0	16	58	0	17	41	0	18	23	0	19	5
4·1																		
4·2																		
4·3																		
4·4																		
4·5																		
4·6																		
4·7																		
4·8																		
4·9																		
5·0																		

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	140 Feet.	145 Feet.	150 Feet.	155 Feet.	160 Feet.	165 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
0·1	12 58 1	13 24 49	13 51 31	14 18 7	14 44 37	15 11 0
0·2	6 34 3	6 48 0	7 1 56	7 15 50	7 29 45	7 43 38
0·3	4 23 21	4 32 43	4 42 4	4 51 26	5 0 47	5 10 8
0·4	3 17 41	3 24 43	3 31 46	3 38 48	3 45 51	3 52 53
0·5	2 38 12	2 43 51	2 49 29	2 55 8	3 0 46	3 6 24
0·6	2 11 52	2 16 34	2 21 17	2 25 59	2 30 41	2 35 23
0·7	1 53 3	1 57 5	2 1 7	2 5 9	2 9 11	2 13 13
0·8	1 38 55	1 42 27	1 45 59	1 49 31	1 53 3	1 56 34
0·9	1 27 56	1 31 4	1 34 13	1 37 21	1 40 29	1 43 38
1·0	1 19 9	1 21 58	1 24 48	1 27 37	1 30 27	1 33 16
1·1	1 11 57	1 14 31	1 17 5	1 19 40	1 22 14	1 24 48
1·2	1 5 57	1 8 19	1 10 40	1 13 1	1 15 23	1 17 44
1·3	1 0 53	1 3 4	1 5 14	1 7 25	1 9 35	1 11 45
1·4	0 56 32	0 58 33	1 0 35	1 2 36	1 4 37	1 6 38
1·5	0 52 46	0 54 39	0 56 32	0 58 25	1 0 18	1 2 11
1·6	0 49 28	0 51 14	0 53 0	0 54 46	0 56 32	0 58 18
1·7	0 46 34	0 48 14	0 49 53	0 51 33	0 53 13	0 54 53
1·8	0 43 58	0 45 33	0 47 7	0 48 41	0 50 15	0 51 49
1·9	0 41 40	0 43 9	0 44 38	0 46 7	0 47 37	0 49 6
2·0	0 39 35	0 40 59	0 42 24	0 43 49	0 45 14	0 46 39
2·1	0 37 42	0 39 2	0 40 23	0 41 44	0 43 5	0 44 26
2·2	0 35 59	0 37 16	0 38 33	0 39 50	0 41 7	0 42 24
2·3	0 34 25	0 35 39	0 36 53	0 38 6	0 39 20	0 40 34
2·4	0 32 59	0 34 10	0 35 20	0 36 31	0 37 42	0 38 52
2·5	0 31 40	0 32 48	0 33 56	0 35 3	0 36 11	0 37 19

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	140 Feet.	145 Feet.	150 Feet.	155 Feet.	160 Feet.	165 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ″
2·6	0 30 27	0 31 32	0 32 37	0 33 43	0 34 48	0 35 53
2·7	0 29 19	0 30 22	0 31 25	0 32 28	0 33 31	0 34 33
2·8	0 28 16	0 29 17	0 30 18	0 31 18	0 32 19	0 33 19
2·9	0 27 18	0 28 16	0 29 15	0 30 13	0 31 12	0 32 10
3·0	0 26 23	0 27 20	0 28 16	0 29 13	0 30 9	0 31 6
3·1	0 25 32	0 26 27	0 27 22	0 28 16	0 29 11	0 30 6
3·2	0 24 44	0 25 37	0 26 30	0 27 23	0 28 16	0 29 9
3·3	0 23 59	0 24 51	0 25 42	0 26 34	0 27 25	0 28 16
3·4	0 23 17	0 24 7	0 24 57	0 25 47	0 26 37	0 27 27
3·5	0 22 37	0 23 26	0 24 14	0 25 2	0 25 51	0 26 40
3·6	0 21 59	0 22 47	0 23 34	0 24 21	0 25 8	0 25 55
3·7	0 21 24	0 22 10	0 22 55	0 23 41	0 24 27	0 25 13
3·8	0 20 50	0 21 35	0 22 19	0 23 4	0 23 49	0 24 33
3·9	0 20 18	0 21 1	0 21 45	0 22 29	0 23 12	0 23 55
4·0	0 19 48	0 20 30	0 21 12	0 21 55	0 22 37	0 23 20
4·1						
4·2						
4·3						
4·4						
4·5						
4·6						
4·7						
4·8						
4·9						
5·0						

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	170 Feet.	**175 Feet.**	**180 Feet.**	**185 Feet.**	**190 Feet.**	**195 Feet.**
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
0·1	15 37 17	16 3 26	16 29 29	16 55 26	17 21 14	17 46 56
0·2	7 57 31	8 11 22	8 25 13	8 39 2	8 52 50	9 6 38
0·3	5 19 29	5 28 49	5 38 9	5 47 29	5 56 49	6 6 8
0·4	3 59 55	4 6 57	4 13 59	4 21 0	4 28 2	4 35 3
0·5	3 12 3	3 17 41	3 23 19	3 28 57	3 34 35	3 40 13
0·6	2 40 5	2 44 47	2 49 29	2 54 11	2 58 53	3 3 35
0·7	2 17 15	2 21 17	2 25 18	2 29 20	2 33 22	2 37 24
0·8	2 0 6	2 3 38	2 7 10	2 10 41	2 14 13	2 17 45
0·9	1 46 46	1 49 54	1 53 3	1 56 11	1 59 19	2 2 27
1·0	1 36 6	1 38 55	1 41 45	1 44 34	1 47 24	1 50 13
1·1	1 27 22	1 29 56	1 32 30	1 35 4	1 37 38	1 40 12
1·2	1 20 5	1 22 27	1 24 48	1 27 9	1 29 30	1 31 52
1·3	1 13 56	1 16 6	1 18 17	1 20 27	1 22 37	1 24 48
1·4	1 8 39	1 10 40	1 12 41	1 14 42	1 16 43	1 18 45
1·5	1 4 4	1 5 57	1 7 51	1 9 44	1 11 37	1 13 30
1·6	1 0 4	1 1 50	1 3 36	1 5 22	1 7 8	1 8 54
1·7	0 56 32	0 58 12	0 59 52	1 1 32	1 3 11	1 4 51
1·8	0 53 24	0 54 58	0 56 32	0 58 6	0 59 41	1 1 15
1·9	0 50 35	0 52 4	0 53 34	0 55 3	0 56 32	0 58 1
2·0	0 48 3	0 49 28	0 50 53	0 52 18	0 53 43	0 55 7
2·1	0 45 46	0 47 7	0 48 28	0 49 49	0 51 9	0 52 30
2·2	0 43 41	0 44 58	0 46 16	0 47 33	0 48 50	0 50 7
2·3	0 41 48	0 43 1	0 44 15	0 45 29	0 46 42	0 47 56
2·4	0 40 3	0 41 14	0 42 24	0 43 35	0 44 46	0 45 56
2·5	0 38 27	0 39 35	0 40 43	0 41 50	0 42 58	0 44 6

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.																	
	170 Feet.			175 Feet.			180 Feet.			185 Feet.			190 Feet.			195 Feet.		
m.	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″
2·6	0	36	58	0	38	3	0	39	9	0	40	14	0	41	19	0	42	24
2·7	0	35	36	0	36	39	0	37	42	0	38	45	0	39	47	0	40	50
2·8	0	34	20	0	35	20	0	36	21	0	37	22	0	38	22	0	39	23
2·9	0	33	9	0	34	7	0	35	6	0	36	4	0	37	3	0	38	1
3·0	0	32	2	0	32	59	0	33	56	0	34	52	0	35	49	0	36	45
3·1	0	31	0	0	31	55	0	32	50	0	33	45	0	34	39	0	35	34
3·2	0	30	2	0	30	55	0	31	48	0	32	41	0	33	34	0	34	27
3·3	0	29	8	0	29	59	0	30	51	0	31	42	0	32	33	0	33	25
3·4	0	28	16	0	29	6	0	29	56	0	30	46	0	31	36	0	32	26
3·5	0	27	28	0	28	16	0	29	5	0	29	53	0	30	42	0	31	30
3·6	0	26	42	0	27	29	0	28	16	0	29	3	0	29	51	0	30	38
3·7	0	25	59	0	26	45	0	27	31	0	28	16	0	29	2	0	29	48
3·8	0	25	18	0	26	2	0	26	47	0	27	32	0	28	16	0	29	1
3·9	0	24	39	0	25	23	0	26	6	0	26	49	0	27	33	0	28	16
4·0	0	24	2	0	24	44	0	25	27	0	26	9	0	26	52	0	27	34
4·1																		
4·2																		
4·3																		
4·4																		
4·5																		
4·6																		
4·7																		
4·8																		
4·9																		
5·0																		

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	200 Feet.	205 Feet.	210 Feet.	215 Feet.	220 Feet.	225 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
0·1	18 12 30	18 37 57	19 3 17	19 28 28	19 53 32	20 18 28
0·2	9 20 24	9 34 9	9 47 53	10 1 36	10 15 18	10 28 59
0·3	6 15 27	6 24 45	6 34 3	6 43 21	6 52 39	7 1 56
0·4	4 42 4	4 4 6	4 56 7	5 3 7	5 10 8	5 17 9
0·5	3 45 51	3 51 28	3 57 6	4 2 44	4 8 21	4 13 58
0·6	3 8 17	3 12 59	3 17 41	3 22 22	3 27 4	3 31 46
0·7	2 41 26	2 45 28	2 49 29	2 53 31	2 57 33	3 1 34
0·8	2 21 17	2 24 48	2 28 20	2 31 51	2 35 23	2 38 55
0·9	2 5 36	2 8 44	2 11 52	2 15 0	2 18 8	2 21 17
1·0	1 53 3	1 55 52	1 58 41	2 1 31	2 4 20	2 7 10
1·1	1 42 46	1 45 21	1 47 55	1 50 29	1 53 3	1 55 37
1·2	1 34 13	1 36 34	1 38 55	1 41 17	1 43 38	1 45 59
1·3	1 26 58	1 29 9	1 31 19	1 33 29	1 35 40	1 37 50
1·4	1 20 46	1 22 47	1 24 48	1 26 49	1 28 50	1 30 51
1·5	1 15 23	1 17 16	1 19 9	1 21 2	1 22 55	1 24 48
1·6	1 10 40	1 12 26	1 14 12	1 15 58	1 17 44	1 19 30
1·7	1 6 31	1 8 11	1 9 50	1 11 30	1 13 10	1 14 49
1·8	1 2 49	1 4 23	1 5 57	1 7 32	1 9 6	1 10 40
1·9	0 59 31	1 1 0	1 2 29	1 3 58	1 5 28	1 6 57
2·0	0 56 32	0 57 57	0 59 22	1 0 47	1 2 11	1 3 36
2·1	0 53 51	0 55 12	0 56 32	0 57 53	0 59 14	1 0 35
2·2	0 51 24	0 52 41	0 53 58	0 55 15	0 56 32	0 57 49
2·3	0 49 10	0 50 24	0 51 37	0 52 51	0 54 5	0 55 19
2·4	0 47 7	0 48 18	0 49 28	0 50 39	0 51 50	0 53 0
2·5	0 45 14	0 46 22	0 47 30	0 48 38	0 49 45	0 50 53

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	200 Feet.	205 Feet.	210 Feet.	215 Feet.	220 Feet.	225 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
2·6	0 43 30	0 44 35	0 45 40	0 46 45	0 47 50	0 48 56
2·7	0 41 53	0 42 56	0 43 58	0 45 1	0 46 4	0 47 7
2·8	0 40 23	0 41 24	0 42 24	0 43 25	0 44 26	0 45 26
2·9	0 39 0	0 39 58	0 40 57	0 41 55	0 42 54	0 43 52
3·0	0 37 42	0 38 38	0 39 35	0 40 31	0 41 28	0 42 24
3·1	0 36 29	0 37 24	0 38 18	0 39 13	0 40 8	0 41 2
3·2	0 35 20	0 36 13	0 37 6	0 37 59	0 38 52	0 39 45
3·3	0 34 16	0 35 7	0 35 59	0 36 50	0 37 42	0 38 33
3·4	0 33 16	0 34 5	0 34 55	0 35 45	0 36 35	0 37 25
3·5	0 32 19	0 33 7	0 33 56	0 34 44	0 35 33	0 36 21
3·6	0 31 25	0 32 12	0 32 59	0 33 46	0 34 33	0 35 20
3·7	0 30 34	0 31 20	0 32 5	0 32 51	0 33 37	0 34 23
3·8	0 29 46	0 30 30	0 31 15	0 31 59	0 32 44	0 33 29
3·9	0 29 0	0 29 43	0 30 27	0 31 10	0 31 54	0 32 37
4·0	0 28 16	0 28 59	0 29 41	0 30 24	0 31 6	0 31 48
4·1						
4·2						
4·3						
4·4						
4·5						
4·6						
4·7						
4·8						
4·9						
5·0						

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	230 Feet.	235 Feet.	240 Feet.	245 Feet.	250 Feet.	255 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
0·1	20 43 16	21 7 56	21 32 27	21 56 51	22 21 6	22 45 13
0·2	10 42 38	10 56 17	11 9 53	11 23 29	11 37 4	11 50 37
0·3	7 11 13	7 20 29	7 29 45	7 39 1	7 48 16	7 57 31
0·4	5 24 9	5 31 9	5 38 9	5 45 9	5 52 9	5 59 9
0·5	4 19 36	4 25 13	4 30 50	4 36 27	4 42 4	4 47 41
0·6	3 36 27	3 41 9	3 45 51	3 50 32	3 55 13	3 59 55
0·7	3 5 36	3 9 38	3 13 39	3 17 41	3 21 42	3 25 44
0·8	2 42 26	2 45 58	2 49 29	2 53 1	2 56 32	3 0 4
0·9	2 24 25	2 27 33	2 30 41	2 33 49	2 36 57	2 40 5
1·0	2 9 59	2 12 48	2 15 38	2 18 27	2 21 17	2 24 6
1·1	1 58 11	2 0 45	2 3 19	2 5 53	2 8 27	2 11 1
1·2	1 48 20	1 50 41	1 53 3	1 55 24	1 57 45	2 0 6
1·3	1 40 00	1 42 11	1 44 21	1 46 32	1 48 42	1 50 52
1·4	1 32 52	1 34 53	1 36 54	1 38 55	1 40 56	1 42 57
1·5	1 26 41	1 28 34	1 30 27	1 32 20	1 34 13	1 36 6
1·6	1 21 16	1 23 2	1 24 48	1 26 34	1 28 20	1 30 6
1·7	1 16 29	1 18 9	1 19 49	1 21 28	1 23 8	1 24 48
1·8	1 12 14	1 13 49	1 15 23	1 16 57	1 18 31	1 20 5
1·9	1 8 26	1 9 55	1 11 25	1 12 54	1 14 23	1 15 52
2·0	1 5 1	1 6 26	1 7 51	1 9 15	1 10 40	1 12 5
2·1	1 1 55	1 3 16	1 4 37	1 5 57	1 7 18	1 8 39
2·2	0 59 6	1 0 24	1 1 41	1 2 58	1 4 15	1 5 32
2·3	0 56 32	0 57 46	0 59 0	1 0 13	1 1 27	1 2 41
2·4	0 54 11	0 55 22	0 56 32	0 57 43	0 58 54	1 0 4
2·5	0 52 1	0 53 9	0 54 17	0 55 25	0 56 32	0 57 40

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	230 Feet.	235 Feet.	240 Feet.	245 Feet.	250 Feet.	255 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
2·6	0 50 1	0 51 6	0 52 11	0 53 17	0 54 22	0 55 27
2·7	0 48 10	0 49 13	0 50 15	0 51 18	0 52 21	0 53 24
2·8	0 46 27	0 47 27	0 48 28	0 49 28	0 50 29	0 51 30
2·9	0 44 51	0 45 49	0 46 48	0 47 46	0 48 45	0 49 43
3·0	0 43 21	0 44 17	0 45 14	0 46 10	0 47 7	0 48 3
3·1	0 41 57	0 42 52	0 43 46	0 44 41	0 45 36	0 46 31
3·2	0 40 38	0 41 31	0 42 24	0 43 17	0 44 10	0 45 3
3·3	0 39 25	0 40 16	0 41 7	0 41 59	0 42 50	0 43 41
3·4	0 38 15	0 39 5	0 39 55	0 40 45	0 41 35	0 42 24
3·5	0 37 9	0 37 58	0 38 46	0 39 35	0 40 23	0 41 12
3·6	0 36 7	0 36 55	0 37 42	0 38 29	0 39 16	0 40 3
3·7	0 35 9	0 35 55	0 36 41	0 37 27	0 38 12	0 38 58
3·8	0 34 13	0 34 58	0 35 43	0 36 27	0 37 12	0 37 57
3·9	0 33 21	0 34 4	0 34 48	0 35 31	0 36 15	0 36 58
4·0	0 32 31	0 33 13	0 33 56	0 34 38	0 35 20	0 36 3
4·1						
4·2						
4·3						
4·4						
4·5						
4·6						
4·7						
4·8						
4·9						
5·0						

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	260 Feet.	265 Feet.	270 Feet.	275 Feet.	280 Feet.	285 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
0·1	23 9 11	23 33 1	23 56 42	24 20 14	24 43 38	25 6 53
0·2	12 4 8	12 17 39	12 31 8	12 44 35	12 58 1	13 11 26
0·3	8 6 45	8 15 59	8 25 13	8 34 26	8 43 38	8 52 50
0·4	6 6 8	6 13 7	6 20 6	6 27 5	6 34 3	6 41 2
0·5	4 53 18	4 58 55	5 4 32	5 10 8	5 15 45	5 21 21
0·6	4 4 36	4 9 17	4 13 59	4 18 40	4 23 21	4 28 2
0·7	3 29 45	3 33 47	3 37 48	3 41 49	3 45 51	3 49 52
0·8	3 3 35	3 7 7	3 10 38	3 14 9	3 17 41	3 21 12
0·9	2 43 13	2 46 21	2 49 29	2 52 37	2 55 45	2 58 53
1·0	2 26 55	2 29 45	2 32 34	2 35 23	2 38 12	2 41 2
1·1	2 13 35	2 16 9	2 18 43	2 21 17	2 23 50	2 26 24
1·2	2 2 27	2 4 49	2 7 10	2 9 31	2 11 52	2 14 13
1·3	1 53 3	1 55 13	1 57 23	1 59 34	2 1 44	2 3 54
1·4	1 44 58	1 46 59	1 49 1	1 51 2	1 53 3	1 55 4
1·5	1 37 59	1 39 52	1 41 45	1 43 38	1 45 31	1 47 24
1·6	1 31 52	1 33 38	1 35 23	1 37 9	1 38 55	1 40 41
1·7	1 26 28	1 28 7	1 29 47	1 31 27	1 33 6	1 34 46
1·8	1 21 39	1 23 14	1 24 48	1 26 22	1 27 56	1 29 30
1·9	1 17 22	1 18 51	1 20 20	1 21 49	1 23 19	1 24 48
2·0	1 13 30	1 14 54	1 16 19	1 17 44	1 19 9	1 20 34
2·1	1 10 0	1 11 21	1 12 41	1 14 2	1 15 23	1 16 43
2·2	1 6 50	1 8 6	1 9 23	1 10 40	1 11 57	1 13 14
2·3	1 3 55	1 5 8	1 6 22	1 7 36	1 8 50	1 10 3
2·4	1 1 15	1 2 26	1 3 36	1 4 47	1 5 57	1 7 8
2·5	0 58 48	0 59 56	1 1 4	1 2 11	1 3 19	1 4 27

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	260 Feet.	265 Feet.	270 Feet.	275 Feet.	280 Feet.	285 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
2·6	0 56 32	0 57 38	0 58 43	0 59 48	1 0 53	1 1 58
2·7	0 54 27	0 55 30	0 56 32	0 57 35	0 58 38	0 59 41
2·8	0 52 30	0 53 31	0 54 31	0 55 32	0 56 32	0 57 33
2·9	0 50 41	0 51 40	0 52 38	0 53 37	0 54 35	0 55 34
3·0	0 49 0	0 49 57	0 50 53	0 51 50	0 52 46	0 53 43
3·1	0 47 25	0 48 20	0 49 15	0 50 9	0 51 4	0 51 59
3·2	0 45 56	0 46 49	0 47 42	0 48 35	0 49 28	0 50 21
3·3	0 44 33	0 45 24	0 46 16	0 47 7	0 47 58	0 48 50
3·4	0 43 14	0 44 4	0 44 54	0 45 44	0 46 34	0 47 24
3·5	0 42 0	0 42 49	0 43 37	0 44 26	0 45 14	0 46 2
3·6	0 40 50	0 41 38	0 42 24	0 43 11	0 43 58	0 44 46
3·7	0 39 44	0 40 30	0 41 16	0 42 1	0 42 47	0 43 33
3·8	0 38 41	0 39 26	0 40 10	0 40 55	0 41 40	0 42 24
3·9	0 37 42	0 38 25	0 39 9	0 39 52	0 40 36	0 41 19
4·0	0 36 45	0 37 28	0 38 10	0 38 52	0 39 35	0 40 17
4·1						
4·2						
4·3						
4·4						
4·5						
4·6						
4·7						
4·8						
4·9						
5·0						

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE					
	290 Feet.	295 Feet.	300 Feet.	310 Feet.	320 Feet.	330 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
0·1	25 30 0	25 52 57	26 15 46	27 0 56	27 45 31	28 29 29
0·2	13 24 49	13 38 11	13 51 31	14 18 7	14 44 37	15 11 0
0·3	9 2 2	9 11 13	9 20 24	9 38 44	9 57 2	10 15 18
0·4	6 48 0	6 54 58	7 1 56	7 15 51	7 29 45	7 43 38
0·5	5 26 57	5 32 33	5 38 9	5 49 21	6 0 32	6 11 43
0·6	4 32 43	4 37 24	4 42 4	4 51 26	5 0 47	5 10 8
0·7	3 53 53	3 57 54	4 1 55	4 9 58	4 18 0	4 26 1
0·8	3 24 43	3 28 15	3 31 46	3 38 48	3 45 51	3 52 53
0·9	3 2 1	3 5 9	3 8 17	3 14 33	3 20 49	3 27 4
1·0	2 43 51	2 46 40	2 49 29	2 55 8	3 0 46	3 6 24
1·1	2 28 58	2 31 32	2 34 6	2 39 14	2 44 22	2 49 29
1·2	2 16 34	2 18 55	2 21 17	2 25 59	2 30 41	2 35 23
1·3	2 6 5	2 8 15	2 10 25	2 14 46	2 19 6	2 23 27
1·4	1 57 5	1 59 6	2 1 7	2 5 9	2 9 11	2 13 13
1·5	1 49 17	1 51 10	1 53 3	1 56 49	2 0 34	2 4 20
1·6	1 42 27	1 44 13	1 45 59	1 49 31	1 53 3	1 56 34
1·7	1 36 26	1 38 5	1 39 45	1 43 5	1 46 24	1 49 43
1·8	1 31 4	1 32 39	1 34 13	1 37 21	1 40 29	1 43 38
1·9	1 26 17	1 27 46	1 29 15	1 32 14	1 35 12	1 38 11
2·0	1 21 58	1 23 23	1 24 48	1 27 37	1 30 27	1 33 16
2·1	1 18 4	1 19 25	1 20 46	1 23 27	1 26 8	1 28 50
2·2	1 14 31	1 15 48	1 17 5	1 19 40	1 22 14	1 24 48
2·3	1 11 17	1 12 31	1 13 44	1 16 12	1 18 39	1 21 7
2·4	1 8 19	1 9 29	1 10 40	1 13 1	1 15 23	1 17 44
2·5	1 5 35	1 6 43	1 7 51	1 10 6	1 12 22	1 14 38

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.																	
	290 Feet.			295 Feet.			300 Feet.			310 Feet.			320 Feet.			330 Feet.		
m.	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″
2·6	1	3	4	1	4	9	1	5	14	1	7	25	1	9	35	1	11	45
2·7	1	0	44	1	1	46	1	2	49	1	4	55	1	7	0	1	9	6
2·8	0	58	33	0	59	34	1	0	35	1	2	36	1	4	37	1	6	38
2·9	0	56	32	0	57	31	0	58	29	1	0	26	1	2	23	1	4	20
3·0	0	54	39	0	55	36	0	56	32	0	58	25	1	0	18	1	2	11
3·1	0	52	53	0	53	48	0	54	43	0	56	32	0	58	22	1	0	11
3·2	0	51	14	0	52	7	0	53	0	0	54	46	0	56	32	0	58	18
3·3	0	49	41	0	50	33	0	51	24	0	53	7	0	54	50	0	56	32
3·4	0	48	14	0	49	3	0	49	53	0	51	33	0	53	13	0	54	53
3·5	0	46	51	0	47	39	0	48	28	0	50	5	0	51	42	0	53	19
3·6	0	45	33	0	46	20	0	47	7	0	48	41	0	50	15	0	51	50
3·7	0	44	19	0	45	5	0	45	51	0	47	22	0	48	54	0	50	26
3·8	0	43	9	0	43	54	0	44	38	0	46	7	0	47	37	0	49	6
3·9	0	42	3	0	42	46	0	43	30	0	44	56	0	46	24	0	47	50
4·0	0	40	59	0	41	42	0	42	24	0	43	49	0	45	14	0	46	39
4·1										0	42	45	0	44	8	0	45	31
4·2										0	41	44	0	43	5	0	44	26
4·3										0	40	46	0	42	5	0	43	24
4·4										0	39	50	0	41	7	0	42	24
4·5										0	38	57	0	40	12	0	41	28
4·6										0	38	6	0	39	20	0	40	34
4·7										0	37	18	0	38	30	0	39	42
4·8										0	36	31	0	37	42	0	38	52
4·9										0	35	46	0	36	55	0	38	5
5·0										0	35	3	0	36	11	0	37	19

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	340 Feet.	350 Feet.	360 Feet.	370 Feet.	380 Feet.	390 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
0·1	29 12 52	29 55 38	30 37 48	31 19 22	32 0 19	32 40 41
0·2	15 37 17	16 3 26	16 29 29	16 55 26	17 21 14	17 46 56
0·3	10 33 32	10 51 44	11 9 53	11 28 1	11 46 6	12 4 8
0·4	7 57 31	8 11 22	8 25 12	8 39 2	8 52 50	9 6 38
0·5	6 22 54	6 34 3	6 45 13	6 56 22	7 7 30	7 18 38
0·6	5 19 29	5 28 49	5 38 9	5 47 29	5 56 49	6 6 8
0·7	4 34 3	4 42 4	4 50 6	4 58 7	5 6 8	5 14 9
0·8	3 59 55	4 6 57	4 13 58	4 21 0	4 28 2	4 35 3
0·9	3 33 20	3 39 35	3 45 51	3 52 6	3 58 21	4 4 36
1·0	3 12 3	3 17 41	3 23 19	3 28 57	3 34 35	3 40 13
1·1	2 54 37	2 59 45	3 4 52	3 10 0	3 15 7	3 20 14
1·2	2 40 5	2 44 47	2 49 29	2 54 11	2 58 53	3 3 35
1·3	2 27 47	2 32 8	2 36 28	2 40 49	2 45 9	2 49 29
1·4	2 17 15	2 21 17	2 25 18	2 29 20	2 33 22	2 37 24
1·5	2 8 6	2 11 52	2 15 38	2 19 24	2 23 9	2 26 55
1·6	2 0 6	2 3 38	2 7 10	2 10 41	2 14 13	2 17 45
1·7	1 53 3	1 56 22	1 59 41	2 3 1	2 6 20	2 9 39
1·8	1 46 46	1 49 54	1 53 3	1 56 11	1 59 19	2 2 27
1·9	1 41 9	1 44 7	1 47 6	1 50 4	1 53 3	1 56 1
2·0	1 36 6	1 38 55	1 41 45	1 44 34	1 47 24	1 50 13
2·1	1 31 31	1 34 13	1 36 54	1 39 36	1 42 17	1 44 58
2·2	1 27 22	1 29 56	1 32 30	1 35 4	1 37 38	1 40 12
2·3	1 23 34	1 26 1	1 28 29	1 30 56	1 33 24	1 35 51
2·4	1 20 5	1 22 27	1 24 48	1 27 9	1 29 30	1 31 52
2·5	1 16 53	1 19 9	1 21 24	1 23 40	1 25 56	1 28 11

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.																	
	340 Feet.			350 Feet.			360 Feet.			370 Feet.			380 Feet.			390 Feet.		
m.	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″
2·6	1	13	56	1	16	6	1	18	17	1	20	27	1	22	37	1	24	48
2·7	1	11	12	1	13	17	1	15	23	1	17	28	1	19	34	1	21	39
2·8	1	8	39	1	10	40	1	12	41	1	14	42	1	16	43	1	18	45
2·9	1	6	17	1	8	14	1	10	11	1	12	8	1	14	5	1	16	2
3·0	1	4	4	1	5	57	1	7	51	1	9	44	1	11	37	1	13	30
3·1	1	2	0	1	3	50	1	5	39	1	7	29	1	9	18	1	11	7
3·2	1	0	4	1	1	50	1	3	36	1	5	22	1	7	8	1	8	54
3·3	0	58	15	0	59	58	1	1	41	1	3	23	1	5	6	1	6	49
3·4	0	56	32	0	58	12	0	59	52	1	1	32	1	3	11	1	4	51
3·5	0	54	55	0	56	32	0	58	9	0	59	46	1	1	23	1	3	0
3·6	0	53	24	0	54	58	0	56	32	0	58	6	0	59	41	1	1	15
3·7	0	51	57	0	53	29	0	55	1	0	56	32	0	58	4	0	59	36
3·8	0	50	35	0	52	4	0	53	34	0	55	3	0	56	32	0	58	1
3·9	0	49	17	0	50	44	0	52	11	0	53	38	0	55	5	0	56	32
4·0	0	48	3	0	49	28	0	50	53	0	52	18	0	53	43	0	55	7
4·1	0	46	53	0	48	16	0	49	39	0	51	1	0	52	24	0	53	47
4·2	0	45	46	0	47	7	0	48	28	0	49	49	0	51	9	0	52	30
4·3	0	44	42	0	46	1	0	47	20	0	48	39	0	49	58	0	51	17
4·4	0	43	41	0	44	58	0	46	16	0	47	33	0	48	50	0	50	7
4·5	0	42	43	0	43	58	0	45	14	0	46	29	0	47	45	0	49	0
4·6	0	41	48	0	43	1	0	44	15	0	45	29	0	46	42	0	47	56
4·7	0	40	54	0	42	6	0	43	19	0	44	31	0	45	43	0	46	55
4·8	0	40	3	0	41	14	0	42	24	0	43	35	0	44	46	0	45	56
4·9	0	39	14	0	40	23	0	41	33	0	42	42	0	43	51	0	45	0
5·0	0	38	27	0	39	35	0	40	43	0	41	50	0	42	58	0	44	6

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	400 Feet.	410 Feet.	420 Feet.	430 Feet.	440 Feet.	450 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
0·1	33 20 26	33 59 36	34 38 11	35 16 9	35 53 34	36 30 23
0·2	18 12 30	18 37 57	19 3 17	19 28 28	19 53 32	20 18 28
0·3	12 22 9	12 40 6	12 58 1	13 15 54	13 33 44	13 51 31
0·4	9 20 24	9 34 9	9 47 53	10 1 36	10 15 18	10 28 59
0·5	7 29 45	7 40 52	7 51 58	8 3 3	8 14 8	8 25 13
0·6	6 15 27	6 24 45	6 34 3	6 43 21	6 52 39	7 1 56
0·7	5 22 9	5 30 9	5 38 9	5 46 9	5 54 9	6 2 8
0·8	4 42 4	4 49 6	4 56 7	5 3 7	5 10 8	5 17 9
0·9	4 10 51	4 17 6	4 23 21	4 29 35	4 35 50	4 42 5
1·0	3 45 51	3 51 28	3 57 6	4 2 44	4 8 21	4 13 59
1·1	3 25 22	3 30 29	3 35 36	3 40 43	3 45 51	3 50 58
1·2	3 8 17	3 12 59	3 17 41	3 22 22	3 27 4	3 31 46
1·3	2 53 50	2 58 10	3 2 30	3 6 50	3 11 11	3 15 31
1·4	2 41 26	2 45 28	2 49 29	2 53 31	2 57 33	3 1 34
1·5	2 30 41	2 34 27	2 38 12	2 41 58	2 45 44	2 49 29
1·6	2 21 17	2 24 48	2 28 20	2 31 51	2 35 23	2 38 55
1·7	2 12 58	2 16 18	2 19 37	2 22 56	2 26 15	2 29 35
1·8	2 5 36	2 8 44	2 11 52	2 15 00	2 18 8	2 21 17
1·9	1 58 59	2 1 58	2 4 56	2 7 54	2 10 53	2 13 51
2·0	1 53 3	1 55 52	1 58 41	2 1 31	2 4 20	2 7 10
2·1	1 47 40	1 50 21	1 53 3	1 55 44	1 58 25	2 1 7
2·2	1 42 46	1 45 21	1 47 55	1 50 29	1 53 3	1 55 37
2·3	1 38 18	1 40 46	1 43 13	1 45 41	1 48 8	1 50 35
2·4	1 34 13	1 36 34	1 38 55	1 41 17	1 43 38	1 45 59
2·5	1 30 27	1 32 42	1 34 58	1 37 14	1 39 29	1 41 45

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.																	
	400 Feet.			410 Feet.			420 Feet.			430 Feet.			440 Feet.			450 Feet.		
m.	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″
2·6	1	26	58	1	29	9	1	31	19	1	33	29	1	35	40	1	37	50
2·7	1	23	45	1	25	51	1	27	56	1	30	2	1	32	7	1	34	13
2·8	1	20	46	1	22	47	1	24	48	1	26	49	1	28	50	1	30	51
2·9	1	17	59	1	19	55	1	21	52	1	23	49	1	25	46	1	27	43
3·0	1	15	23	1	17	16	1	19	9	1	21	2	1	22	55	1	24	48
3·1	1	12	57	1	14	46	1	16	36	1	18	25	1	20	14	1	22	4
3·2	1	10	40	1	12	26	1	14	12	1	15	58	1	17	44	1	19	30
3·3	1	8	32	1	10	14	1	11	57	1	13	40	1	15	23	1	17	5
3·4	1	6	31	1	8	11	1	9	50	1	11	30	1	13	10	1	14	49
3·5	1	4	37	1	6	14	1	7	51	1	9	27	1	11	4	1	12	41
3·6	1	2	49	1	4	23	1	5	57	1	7	32	1	9	6	1	10	40
3·7	1	1	7	1	2	39	1	4	11	1	5	42	1	7	14	1	8	46
3·8	0	59	31	1	1	0	1	2	29	1	3	58	1	5	28	1	6	57
3·9	0	57	59	0	59	26	1	0	53	1	2	20	1	3	47	1	5	14
4·0	0	56	32	0	57	57	0	59	22	1	0	47	1	2	11	1	3	36
4·1	0	55	10	0	56	32	0	57	55	0	59	18	1	0	40	1	2	3
4·2	0	53	51	0	55	12	0	56	32	0	57	53	0	59	14	1	0	35
4·3	0	52	36	0	53	55	0	55	13	0	56	32	0	57	51	0	59	10
4·4	0	51	24	0	52	41	0	53	58	0	55	15	0	56	32	0	57	49
4·5	0	50	15	0	51	31	0	52	46	0	54	1	0	55	17	0	56	32
4·6	0	49	10	0	50	24	0	51	37	0	52	51	0	54	5	0	55	19
4·7	0	48	7	0	49	19	0	50	32	0	51	44	0	52	56	0	54	8
4·8	0	47	7	0	48	18	0	49	28	0	50	39	0	51	50	0	53	0
4·9	0	46	9	0	47	19	0	48	28	0	49	37	0	50	46	0	51	55
5·0	0	45	14	0	46	22	0	47	30	0	48	38	0	49	45	0	50	53

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	460 Feet.	470 Feet.	480 Feet.	490 Feet.	500 Feet.	510 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
0·1	37 6 37	37 42 18	38 17 24	38 51 58	39 25 58	39 59 25
0·2	20 43 16	21 7 56	21 32 27	21 56 51	22 21 6	22 45 13
0·3	14 9 16	14 26 58	14 44 37	15 2 13	15 19 46	15 37 17
0·4	10 42 38	10 56 17	11 9 53	11 23 29	11 37 4	11 50 37
0·5	8 36 16	8 47 19	8 58 21	9 9 23	9 20 24	9 31 24
0·6	7 11 13	7 20 29	7 29 45	7 39 1	7 48 16	7 57 31
0·7	6 10 7	6 18 6	6 26 5	6 34 3	6 42 2	6 50 0
0·8	5 24 9	5 31 9	5 38 9	5 45 9	5 52 9	5 59 9
0·9	4 48 19	4 54 33	5 0 47	5 7 1	5 13 15	5 19 29
1·0	4 19 36	4 25 13	4 30 50	4 36 27	4 42 4	4 47 41
1·1	3 56 5	4 1 12	4 6 18	4 11 25	4 16 32	4 21 39
1·2	3 36 27	3 41 9	3 45 51	3 50 32	3 55 13	3 59 55
1·3	3 19 51	3 24 11	3 28 31	3 32 51	3 37 11	3 41 31
1·4	3 5 36	3 9 38	3 13 39	3 17 41	3 21 42	3 25 44
1·5	2 53 15	2 57 0	3 0 46	3 4 32	3 8 17	3 12 3
1·6	2 42 26	2 45 58	2 49 29	2 53 1	2 56 32	3 0 4
1·7	2 32 54	2 36 13	2 39 32	2 42 51	2 46 10	2 49 29
1·8	2 24 25	2 27 33	2 30 41	2 33 49	2 36 57	2 40 5
1·9	2 16 49	2 19 47	2 22 46	2 25 44	2 28 42	2 31 40
2·0	2 9 59	2 12 48	2 15 38	2 18 27	2 21 17	2 24 6
2·1	2 3 48	2 6 29	2 9 11	2 11 52	2 14 33	2 17 15
2·2	1 58 11	2 0 45	2 3 19	2 5 53	2 8 27	2 11 1
2·3	1 53 3	1 55 30	1 57 57	2 0 25	2 2 52	2 5 19
2·4	1 48 20	1 50 41	1 53 3	1 55 24	1 57 45	2 0 6
2·5	1 44 0	1 46 16	1 48 32	1 50 47	1 53 3	1 55 18

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	460 Feet.	470 Feet.	480 Feet.	490 Feet.	500 Feet.	510 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
2·6	1 40 0	1 42 11	1 44 21	1 46 32	1 48 42	1 50 52
2·7	1 36 18	1 38 24	1 40 29	1 42 35	1 44 41	1 46 46
2·8	1 32 52	1 34 53	1 36 54	1 38 55	1 40 55	1 42 57
2·9	1 29 40	1 31 37	1 33 34	1 35 31	1 37 28	1 39 25
3·0	1 26 41	1 28 34	1 30 27	1 32 20	1 34 13	1 36 6
3·1	1 23 52	1 25 42	1 27 32	1 29 21	1 31 11	1 33 0
3·2	1 21 16	1 23 2	1 24 48	1 26 34	1 28 20	1 30 6
3·3	1 18 48	1 20 31	1 22 14	1 23 56	1 25 39	1 27 22
3·4	1 16 29	1 18 9	1 19 49	1 21 28	1 23 8	1 24 48
3·5	1 14 18	1 15 55	1 17 32	1 19 9	1 20 46	1 22 23
3·6	1 12 14	1 13 49	1 15 23	1 16 57	1 18 31	1 20 5
3·7	1 10 17	1 11 49	1 13 21	1 14 52	1 16 24	1 17 55
3·8	1 8 26	1 9 55	1 11 25	1 12 54	1 14 23	1 15 52
3·9	1 6 41	1 8 8	1 9 35	1 11 2	1 12 29	1 13 56
4·0	1 5 1	1 6 26	1 7 51	1 9 15	1 10 40	1 12 5
4·1	1 3 26	1 4 49	1 6 11	1 7 34	1 8 57	1 10 19
4·2	1 1 55	1 3 16	1 4 37	1 5 57	1 7 18	1 8 39
4·3	1 0 29	1 1 48	1 3 7	1 4 26	1 5 44	1 7 3
4·4	0 59 6	1 0 24	1 1 41	1 2 58	1 4 15	1 5 32
4·5	0 57 48	0 59 3	1 0 18	1 1 34	1 2 49	1 4 4
4·6	0 56 32	0 57 46	0 59 0	1 0 13	1 1 27	1 2 41
4·7	0 55 20	0 56 32	0 57 44	0 58 56	1 0 9	1 1 21
4·8	0 54 11	0 55 22	0 56 32	0 57 43	0 58 54	1 0 4
4·9	0 53 5	0 54 14	0 55 23	0 56 32	0 57 42	0 58 51
5·0	0 52 1	0 53 9	0 54 17	0 55 25	0 56 32	0 57 40

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	520 Feet.	530 Feet.	540 Feet.	550 Feet.	560 Feet.	570 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
0·1	40 32 21	41 4 44	41 36 36	42 7 58	42 38 48	43 9 9
0·2	23 9 11	23 33 1	23 56 42	24 20 14	24 43 38	25 6 53
0·3	15 54 44	16 12 8	16 29 29	16 46 48	17 4 3	17 21 14
0·4	12 4 8	12 17 39	12 31 8	12 44 35	12 58 1	13 11 26
0·5	9 42 24	9 53 23	10 4 21	10 15 18	10 26 15	10 37 11
0·6	8 6 45	8 15 59	8 25 13	8 34 26	8 43 38	8 52 50
0·7	6 57 57	7 5 55	7 13 52	7 21 49	7 29 45	7 37 41
0·8	6 6 8	6 13 7	6 20 6	6 27 5	6 34 3	6 41 2
0·9	5 25 43	5 31 56	5 38 9	5 44 23	5 50 36	5 56 49
1·0	4 53 18	4 58 55	5 4 32	5 10 8	5 15 45	5 21 21
1·1	4 26 45	4 31 52	4 36 58	4 42 5	4 47 11	4 52 17
1·2	4 4 36	4 9 17	4 13 59	4 18 40	4 23 21	4 28 2
1·3	3 45 51	3 50 10	3 54 30	3 58 50	4 3 10	4 7 29
1·4	3 29 45	3 33 47	3 37 48	3 41 49	3 45 51	3 49 52
1·5	3 15 48	3 19 33	3 23 19	3 27 4	3 30 50	3 34 35
1·6	3 3 35	3 7 7	3 10 38	3 14 9	3 17 41	3 21 12
1·7	2 52 48	2 56 7	2 59 26	3 2 45	3 6 4	3 9 23
1·8	2 43 13	2 46 21	2 49 29	2 52 37	2 55 45	2 58 53
1·9	2 34 39	2 37 37	2 40 35	2 43 33	2 46 31	2 49 29
2·0	2 26 55	2 29 45	2 32 34	2 35 22	2 38 12	2 41 2
2·1	2 19 56	2 22 37	2 25 18	2 28 0	2 30 41	2 33 22
2·2	2 13 35	2 16 9	2 18 43	2 21 17	2 23 50	2 26 24
2·3	2 7 47	2 10 14	2 12 41	2 15 8	2 17 36	2 20 3
2·4	2 2 27	2 4 49	2 7 10	2 9 31	2 11 52	2 14 13
2·5	*1 57 34*	1 59 49	2 2 5	2 4 20	2 6 36	2 8 51

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.																	
	520 Feet.			530 Feet.			540 Feet.			550 Feet.			560 Feet.			570 Feet.		
m.	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″
2·6	1	53	3	1	55	13	1	57	23	1	59	34	2	1	44	2	3	54
2·7	1	48	52	1	50	57	1	53	3	1	55	8	1	57	14	1	59	19
2·8	1	44	58	1	46	59	1	49	1	1	51	2	1	53	3	1	55	4
2·9	1	41	21	1	43	18	1	45	15	1	47	12	1	49	9	1	51	6
3·0	1	37	59	1	39	52	1	41	45	1	43	38	1	45	31	1	47	24
3·1	1	34	49	1	36	39	1	38	28	1	40	17	1	42	7	1	43	56
3·2	1	31	52	1	33	38	1	35	23	1	37	9	1	38	55	1	40	41
3·3	1	29	5	1	30	47	1	32	30	1	34	13	1	35	56	1	37	38
3·4	1	26	28	1	28	7	1	29	47	1	31	27	1	33	6	1	34	46
3·5	1	23	59	1	25	36	1	27	13	1	28	50	1	30	27	1	32	4
3·6	1	21	39	1	23	14	1	24	48	1	26	22	1	27	56	1	29	30
3·7	1	19	27	1	20	59	1	22	30	1	24	2	1	25	34	1	27	5
3·8	1	17	22	1	18	51	1	20	20	1	21	49	1	23	19	1	24	48
3·9	1	15	23	1	16	50	1	18	17	1	19	44	1	21	10	1	22	37
4·0	1	13	30	1	14	54	1	16	19	1	17	44	1	19	9	1	20	34
4·1	1	11	42	1	13	5	1	14	28	1	15	50	1	17	13	1	18	36
4·2	1	10	0	1	11	21	1	12	41	1	14	2	1	15	23	1	16	43
4·3	1	8	22	1	9	41	1	11	0	1	12	19	1	13	38	1	14	56
4·4	1	6	49	1	8	6	1	9	23	1	10	40	1	11	57	1	13	14
4·5	1	5	20	1	6	35	1	7	51	1	9	6	1	10	21	1	11	37
4·6	1	3	55	1	5	8	1	6	22	1	7	36	1	8	50	1	10	3
4·7	1	2	33	1	3	45	1	4	57	1	6	10	1	7	22	1	8	34
4·8	1	1	15	1	2	26	1	3	36	1	4	47	1	5	57	1	7	8
4·9	1	0	0	1	1	9	1	2	18	1	3	28	1	4	37	1	5	46
5·0	0	58	48	0	59	56	1	1	4	1	2	11	1	3	19	1	4	27

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	580 Feet.	590 Feet.	600 Feet.	610 Feet.	620 Feet.	630 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
0·1	43 38 59	44 8 21	44 37 14	45 5 39	45 33 36	46 1 5
0·2	25 30 0	25 52 57	26 15 46	26 38 25	27 0 56	27 23 18
0·3	17 38 23	17 55 29	18 12 30	18 29 29	18 46 25	19 3 17
0·4	13 24 49	13 38 11	13 51 31	14 4 50	14 18 7	14 31 23
0·5	10 48 6	10 59 0	11 9 53	11 20 46	11 31 38	11 42 29
0·6	9 2 2	9 11 13	9 20 24	9 29 34	9 38 44	9 47 54
0·7	7 45 37	7 53 33	8 1 28	8 9 23	8 17 18	8 25 13
0·8	6 48 0	6 54 58	7 1 56	7 8 54	7 15 51	7 22 48
0·9	6 3 2	6 9 14	6 15 27	6 21 39	6 27 51	6 34 4
1·0	5 26 57	5 32 33	5 38 9	5 43 45	5 49 21	5 54 57
1·1	4 57 23	5 2 29	5 7 35	5 12 41	5 17 47	5 22 53
1·2	4 32 43	4 37 24	4 42 4	4 46 45	4 51 26	4 56 7
1·3	4 11 49	4 16 8	4 20 28	4 24 47	4 29 7	4 33 26
1·4	3 53 53	3 57 54	4 1 55	4 5 56	4 9 58	4 13 59
1·5	3 38 20	3 42 5	3 45 51	3 49 36	3 53 21	3 57 6
1·6	3 24 43	3 28 15	3 31 46	3 35 17	3 38 48	3 42 19
1·7	3 12 42	3 16 1	3 19 20	3 22 39	3 25 58	3 29 17
1·8	3 2 1	3 5 9	3 8 17	3 11 25	3 14 33	3 17 41
1·9	2 52 27	2 55 26	2 58 24	3 1 22	3 4 20	3 7 18
2·0	2 43 51	2 46 40	2 49 29	2 52 19	2 55 8	2 57 57
2·1	2 36 3	2 38 45	2 41 26	2 44 7	2 46 48	2 49 29
2·2	2 28 58	2 31 32	2 34 6	2 36 40	2 39 14	2 41 48
2·3	2 22 30	2 24 57	2 27 25	2 29 52	2 32 19	2 34 46
2·4	2 16 34	2 18 55	2 21 17	2 23 38	2 25 59	2 28 20
2·5	2 11 7	2 13 22	2 15 38	2 17 53	2 20 9	2 22 24

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.																	
	580 Feet.			590 Feet.			600 Feet.			610 Feet.			620 Feet.			630 Feet.		
m.	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″
2·6	2	6	5	2	8	15	2	10	25	2	12	35	2	14	46	2	16	56
2·7	2	1	25	2	3	30	2	5	36	2	7	41	2	9	47	2	11	52
2·8	1	57	5	1	59	6	2	1	7	2	3	8	2	5	9	2	7	10
2·9	1	53	3	1	54	59	1	56	56	1	58	53	2	0	50	2	2	47
3·0	1	49	17	1	51	10	1	53	3	1	54	56	1	56	49	1	58	42
3·1	1	45	45	1	47	35	1	49	24	1	51	13	1	53	3	1	54	52
3·2	1	42	27	1	44	13	1	45	59	1	47	45	1	49	31	1	51	17
3·3	1	39	21	1	41	4	1	42	46	1	44	29	1	46	12	1	47	55
3·4	1	36	26	1	38	5	1	39	45	1	41	25	1	43	5	1	44	44
3·5	1	33	41	1	35	17	1	36	54	1	38	31	1	40	8	1	41	45
3·6	1	31	4	1	32	39	1	34	13	1	35	47	1	37	21	1	38	55
3·7	1	28	37	1	30	8	1	31	40	1	33	12	1	34	43	1	36	15
3·8	1	26	17	1	27	46	1	29	15	1	30	45	1	32	14	1	33	43
3·9	1	24	4	1	25	31	1	26	58	1	28	25	1	29	52	1	31	19
4·0	1	21	58	1	23	23	1	24	48	1	26	13	1	27	37	1	29	2
4·1	1	19	58	1	21	21	1	22	44	1	24	6	1	25	29	1	26	52
4·2	1	18	4	1	19	25	1	20	46	1	22	6	1	23	27	1	24	48
4·3	1	16	15	1	17	34	1	18	53	1	20	12	1	21	31	1	22	50
4·4	1	14	31	1	15	48	1	17	5	1	18	23	1	19	40	1	20	57
4·5	1	12	52	1	14	7	1	15	23	1	16	38	1	17	53	1	19	9
4·6	1	11	17	1	12	31	1	13	44	1	14	58	1	16	12	1	17	26
4·7	1	9	46	1	10	58	1	12	10	1	13	22	1	14	35	1	15	47
4·8	1	8	19	1	9	29	1	10	40	1	11	51	1	13	1	1	14	12
4·9	1	6	55	1	8	4	1	9	14	1	10	23	1	11	32	1	12	41
5·0	1	5	35	1	6	43	1	7	51	1	8	58	1	10	6	1	11	14

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	640 Feet.	650 Feet.	660 Feet.	670 Feet.	680 Feet.	690 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
0·1	46 28 8	46 54 44	47 20 54	47 46 39	48 11 58	48 36 53
0·2	27 45 31	28 7 34	28 29 29	28 51 15	29 12 52	29 34 19
0·3	19 20 5	19 36 50	19 53 32	20 10 10	20 26 45	20 43 16
0·4	14 44 37	14 57 49	15 11 0	15 24 9	15 37 17	15 50 22
0·5	11 53 19	12 4 8	12 14 57	12 25 44	12 36 31	12 47 17
0·6	9 57 2	10 6 11	10 15 18	10 24 26	10 33 32	10 42 38
0·7	8 33 7	8 41 0	8 48 54	8 56 47	9 4 40	9 12 32
0·8	7 29 45	7 36 42	7 43 38	7 50 35	7 57 31	8 4 26
0·9	6 40 15	6 46 27	6 52 39	6 58 50	7 5 2	7 11 13
1·0	6 0 32	6 6 8	6 11 43	6 17 19	6 22 54	6 28 29
1·1	5 27 58	5 33 4	5 38 9	5 43 15	5 48 20	5 53 25
1·2	5 0 47	5 5 28	5 10 8	5 14 49	5 19 29	5 24 9
1·3	4 37 45	4 42 4	4 46 24	4 50 43	4 55 2	4 59 21
1·4	4 18 0	4 22 0	4 26 1	4 30 2	4 34 3	4 38 4
1·5	4 0 51	4 4 36	4 8 21	4 12 6	4 15 51	4 19 36
1·6	3 45 51	3 49 22	3 52 53	3 56 24	3 59 55	4 3 26
1·7	3 32 36	3 35 54	3 39 13	3 42 32	3 45 51	3 49 9
1·8	3 20 49	3 23 56	3 27 4	3 30 12	3 33 20	3 36 27
1·9	3 10 16	3 13 14	3 16 12	3 19 10	3 22 8	3 25 6
2·0	3 0 46	3 3 35	3 6 24	3 9 13	3 12 3	3 14 52
2·1	2 52 10	2 54 52	2 57 33	3 0 14	3 2 55	3 5 36
2·2	2 44 22	2 46 55	2 49 29	2 52 3	2 54 37	2 57 11
2·3	2 37 13	2 39 41	2 42 8	2 44 35	2 47 2	2 49 29
2·4	2 30 41	2 33 2	2 35 23	2 37 44	2 40 5	2 42 26
2·5	2 24 40	2 26 55	2 29 11	2 31 26	2 33 42	2 35 57

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.																	
	640 Feet.			650 Feet.			660 Feet.			670 Feet.			680 Feet.			690 Feet.		
m.	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″
2·6	2	19	6	2	21	17	2	23	27	2	25	37	2	27	47	2	29	58
2·7	2	13	57	2	16	3	2	18	8	2	20	14	2	22	19	2	24	25
2·8	2	9	11	2	11	12	2	13	13	2	15	14	2	17	15	2	19	16
2·9	2	4	44	2	6	41	2	8	37	2	10	34	2	12	31	2	14	28
3·0	2	0	34	2	2	27	2	4	20	2	6	13	2	8	6	2	9	59
3·1	1	56	41	1	58	31	2	0	20	2	2	9	2	3	58	2	5	48
3·2	1	53	3	1	54	48	1	56	34	1	58	20	2	0	6	2	1	52
3·3	1	49	37	1	51	20	1	53	3	1	54	45	1	56	28	1	58	11
3·4	1	46	24	1	48	4	1	49	43	1	51	23	1	53	3	1	54	42
3·5	1	43	22	1	44	58	1	46	35	1	48	12	1	49	49	1	51	26
3·6	1	40	29	1	42	4	1	43	38	1	45	12	1	46	46	1	48	20
3·7	1	37	47	1	39	18	1	40	50	1	42	21	1	43	53	1	45	25
3·8	1	35	12	1	36	42	1	38	11	1	39	40	1	41	9	1	42	38
3·9	1	32	46	1	34	13	1	35	40	1	37	7	1	38	34	1	40	0
4·0	1	30	27	1	31	52	1	33	16	1	34	41	1	36	6	1	37	31
4·1	1	28	15	1	29	37	1	31	0	1	32	23	1	33	45	1	35	8
4·2	1	26	9	1	27	29	1	28	50	1	30	11	1	31	31	1	32	52
4·3	1	24	8	1	25	27	1	26	46	1	28	5	1	29	24	1	30	43
4·4	1	22	14	1	23	31	1	24	48	1	26	5	1	27	22	1	28	39
4·5	1	20	24	1	21	39	1	22	55	1	24	10	1	25	25	1	26	41
4·6	1	18	39	1	19	53	1	21	7	1	22	20	1	23	34	1	24	48
4·7	1	16	59	1	18	11	1	19	23	1	20	35	1	21	47	1	23	0
4·8	1	15	23	1	16	33	1	17	44	1	18	55	1	20	5	1	21	16
4·9	1	13	50	1	15	0	1	16	9	1	17	18	1	18	27	1	19	36
5·0	1	12	22	1	13	30	1	14	38	1	15	45	1	16	53	1	18	1

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	700 Feet.	710 Feet.	720 Feet.	730 Feet.	740 Feet.	750 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
0·1	49 1 24	49 25 31	49 49 15	50 12 36	50 35 34	50 58 10
0·2	29 55 38	30 16 48	30 37 48	30 58 39	31 19 22	31 39 55
0·3	20 59 43	21 16 7	21 32 27	21 48 44	22 4 57	22 21 6
0·4	16 3 26	16 16 29	16 29 29	16 42 28	16 55 26	17 8 21
0·5	12 58 2	13 8 45	13 19 28	13 30 10	13 40 51	13 51 31
0·6	10 51 44	11 0 58	11 9 53	11 18 58	11 28 1	11 37 4
0·7	9 20 24	9 28 16	9 36 7	9 43 58	9 51 48	9 59 39
0·8	8 11 22	8 18 17	8 25 12	8 32 7	8 39 2	8 45 56
0·9	7 17 24	7 23 34	7 29 45	7 35 56	7 42 6	7 48 16
1·0	6 34 3	6 39 38	6 45 13	6 50 47	6 56 22	7 1 56
1·1	5 58 30	6 3 35	6 8 40	6 13 45	6 18 50	6 23 55
1·2	5 28 49	5 33 29	5 38 9	5 42 49	5 47 29	5 52 9
1·3	5 3 40	5 7 59	5 12 18	5 16 36	5 20 55	5 25 14
1·4	4 42 4	4 46 5	4 50 6	4 54 6	4 58 7	5 2 7
1·5	4 23 21	4 27 6	4 30 50	4 34 35	4 38 19	4 42 4
1·6	4 6 57	4 10 28	4 13 59	4 17 29	4 21 0	4 24 31
1·7	3 52 28	3 55 47	3 59 5	4 2 24	4 5 42	4 9 1
1·8	3 39 35	3 42 43	3 45 51	3 48 58	3 52 6	3 55 13
1·9	3 28 4	3 31 1	3 33 59	3 36 57	3 39 55	3 42 53
2·0	3 17 41	3 20 30	3 23 19	3 26 8	3 28 57	3 31 46
2·1	3 8 17	3 10 58	3 13 39	3 16 20	3 19 1	3 21 42
2·2	2 59 45	3 2 18	3 4 52	3 7 26	3 10 0	3 12 33
2·3	2 51 56	2 54 24	2 56 51	2 59 18	3 1 45	3 4 12
2·4	2 44 47	2 47 8	2 49 29	2 51 50	2 54 11	2 56 32
2·5	2 38 12	2 40 28	2 42 43	2 44 59	2 47 14	2 49 29

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.																	
	700 Feet.			710 Feet.			720 Feet.			730 Feet.			740 Feet.			750 Feet.		
m.	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″
2·6	2	32	8	2	34	18	2	36	28	2	38	38	2	40	49	2	42	59
2·7	2	26	30	2	28	36	2	30	41	2	32	46	2	34	52	2	36	57
2·8	2	21	17	2	23	17	2	25	18	2	27	19	2	29	20	2	31	21
2·9	2	16	25	2	18	21	2	20	18	2	22	15	2	24	12	2	26	9
3·0	2	11	52	2	13	45	2	15	38	2	17	31	2	19	23	2	21	16
3·1	2	7	37	2	9	26	2	11	16	2	13	5	2	14	54	2	16	43
3·2	2	3	38	2	5	24	2	7	10	2	8	56	2	10	41	2	12	27
3·3	1	59	53	2	1	36	2	3	19	2	5	1	2	6	44	2	8	27
3·4	1	56	22	1	58	2	1	59	41	2	1	21	2	3	1	2	4	40
3·5	1	53	3	1	54	39	1	56	16	1	57	53	1	59	30	2	1	7
3·6	1	49	54	1	51	29	1	53	3	1	54	37	1	56	11	1	57	45
3·7	1	46	56	1	48	28	1	49	59	1	51	31	1	53	3	1	54	34
3·8	1	44	7	1	45	37	1	47	6	1	48	35	1	50	4	1	51	33
3·9	1	41	27	1	42	54	1	44	21	1	45	48	1	47	15	1	48	42
4·0	1	38	55	1	40	20	1	41	45	1	43	9	1	44	34	1	45	59
4·1	1	36	31	1	37	53	1	39	16	1	40	39	1	42	1	1	43	24
4·2	1	34	13	1	35	34	1	36	54	1	38	15	1	39	36	1	40	56
4·3	1	32	1	1	33	20	1	34	39	1	35	58	1	37	17	1	38	36
4·4	1	29	56	1	31	13	1	32	30	1	33	47	1	35	4	1	36	21
4·5	1	27	56	1	29	11	1	30	27	1	31	42	1	32	57	1	34	13
4·6	1	26	1	1	27	15	1	28	29	1	29	43	1	30	56	1	32	10
4·7	1	24	12	1	25	24	1	26	36	1	27	48	1	29	0	1	30	12
4·8	1	22	27	1	23	37	1	24	48	1	25	59	1	27	10	1	28	20
4·9	1	20	46	1	21	55	1	23	4	1	24	13	1	25	22	1	26	32
5·0	1	19	9	1	20	17	1	21	24	1	22	32	1	23	40	1	24	48

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	760 Feet.	770 Feet.	780 Feet.	790 Feet.	800 Feet.	810 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
0·1	51 20 25	51 42 18	52 3 51	52 25 3	52 45 55	53 6 27
0·2	32 0 19	32 20 35	32 40 41	33 0 38	33 20 26	33 40 6
0·3	22 37 11	22 53 13	23 9 11	23 25 5	23 40 56	23 56 42
0·4	17 21 14	17 34 6	17 46 56	17 59 44	18 12 30	18 25 15
0·5	14 2 10	14 12 49	14 23 26	14 34 2	14 44 37	14 55 11
0·6	11 46 6	11 55 7	12 4 8	12 13 9	12 22 9	12 31 8
0·7	10 7 29	10 15 18	10 23 7	10 30 56	10 38 44	10 46 32
0·8	8 52 50	8 59 44	9 6 37	9 13 31	9 20 24	9 27 18
0·9	7 54 26	8 0 35	8 6 45	8 12 54	8 19 4	8 25 13
1·0	7 7 30	7 13 4	7 18 38	7 24 12	7 29 45	7 35 18
1·1	6 28 59	6 34 4	6 39 8	6 44 12	6 49 16	6 54 20
1·2	5 56 49	6 1 28	6 6 8	6 10 47	6 15 27	6 20 6
1·3	5 29 32	5 33 51	5 38 9	5 42 28	5 46 46	5 51 4
1·4	5 6 8	5 10 8	5 14 9	5 18 9	5 22 9	5 26 9
1·5	4 45 49	4 49 34	4 53 18	4 57 3	5 0 47	5 4 32
1·6	4 28 2	4 31 32	4 35 3	4 38 34	4 42 4	4 45 35
1·7	4 12 19	4 15 38	4 18 56	4 22 15	4 25 33	4 28 51
1·8	3 58 21	4 1 28	4 4 36	4 7 44	4 10 51	4 13 59
1·9	3 45 51	3 48 48	3 51 46	3 54 44	3 57 42	4 0 39
2·0	3 34 35	3 37 24	3 40 13	3 43 2	3 45 51	3 48 39
2·1	3 24 23	3 27 4	3 29 45	3 32 26	3 35 7	3 37 48
2·2	3 15 7	3 17 41	3 20 14	3 22 48	3 25 22	3 27 55
2·3	3 6 39	3 9 6	3 11 33	3 14 0	3 16 27	3 18 54
2·4	2 58 53	3 1 14	3 3 35	3 5 56	3 8 17	3 10 38
2·5	2 51 45	2 54 0	2 56 15	2 58 31	3 0 46	3 3 1

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.																	
	760 Feet.			770 Feet.			780 Feet.			790 Feet.			800 Feet.			810 Feet.		
m.	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″
2·6	2	45	9	2	47	19	2	49	29	2	51	39	2	53	50	2	56	0
2·7	2	39	3	2	41	8	2	43	13	2	45	18	2	47	24	2	49	29
2·8	2	33	22	2	35	23	2	37	24	2	39	25	2	41	26	2	43	27
2·9	2	28	5	2	30	2	2	31	59	2	33	56	2	35	52	2	37	49
3·0	2	23	9	2	25	2	2	26	55	2	28	48	2	30	41	2	32	34
3·1	2	18	33	2	20	22	2	22	11	2	24	0	2	25	50	2	27	39
3·2	2	14	13	2	15	59	2	17	45	2	19	31	2	21	17	2	23	2
3·3	2	10	9	2	11	52	2	13	35	2	15	17	2	17	0	2	18	43
3·4	2	6	20	2	8	0	2	9	39	2	11	19	2	12	58	2	14	38
3·5	2	2	44	2	4	20	2	5	57	2	7	34	2	9	11	2	10	47
3·6	1	59	19	2	0	53	2	2	27	2	4	1	2	5	36	2	7	10
3·7	1	56	6	1	57	37	1	59	9	2	0	40	2	2	12	2	3	44
3·8	1	53	3	1	54	32	1	56	1	1	57	30	1	58	59	2	0	29
3·9	1	50	9	1	51	36	1	53	3	1	54	30	1	55	56	1	57	23
4·0	1	47	24	1	48	48	1	50	13	1	51	38	1	53	3	1	54	27
4·1	1	44	47	1	46	9	1	47	32	1	48	55	1	50	17	1	51	40
4·2	1	42	17	1	43	38	1	44	58	1	46	19	1	47	40	1	49	1
4·3	1	39	54	1	41	13	1	42	32	1	43	51	1	45	10	1	46	29
4·4	1	37	38	1	38	55	1	40	12	1	41	29	1	42	46	1	44	3
4·5	1	35	28	1	36	44	1	37	59	1	39	14	1	40	29	1	41	45
4·6	1	33	24	1	34	37	1	35	51	1	37	5	1	38	19	1	39	32
4·7	1	31	25	1	32	37	1	33	49	1	35	1	1	36	13	1	37	25
4·8	1	29	30	1	30	41	1	31	52	1	33	2	1	34	13	1	35	23
4·9	1	27	41	1	28	50	1	29	59	1	31	8	1	32	18	1	33	27
5·0	1	25	56	1	27	3	1	28	11	1	29	19	1	30	27	1	31	35

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	820 Feet.	830 Feet.	840 Feet.	850 Feet.	860 Feet.	870 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
0·1	53 26 40	53 46 34	54 6 9	54 25 27	54 44 26	55 3 8
0·2	33 59 36	34 18 58	34 38 10	34 57 15	35 16 9	35 34 56
0·3	24 12 25	24 28 3	24 43 38	24 59 9	25 14 36	25 30 0
0·4	18 37 57	18 50 38	19 3 17	19 15 53	19 28 28	19 41 1
0·5	15 5 44	15 16 16	15 26 47	15 37 17	15 47 45	15 58 13
0·6	12 40 6	12 49 4	12 58 1	13 6 58	13 15 54	13 24 49
0·7	10 54 20	11 2 7	11 9 53	11 17 40	11 25 26	11 33 11
0·8	9 34 9	9 41 1	9 47 53	9 54 45	10 1 36	10 8 27
0·9	8 31 21	8 37 30	8 43 38	8 49 46	8 55 54	9 2 2
1·0	7 40 52	7 46 25	7 51 58	7 57 31	8 3 3	8 8 36
1·1	6 59 24	7 4 28	7 9 32	7 14 35	7 19 39	7 24 42
1·2	6 24 45	6 29 24	6 34 3	6 38 42	6 43 21	6 48 0
1·3	5 55 23	5 59 41	6 3 59	6 8 17	6 12 35	6 16 53
1·4	5 30 9	5 34 9	5 38 9	5 42 9	5 46 9	5 50 9
1·5	5 8 16	5 12 0	5 15 45	5 19 29	5 23 13	5 26 57
1·6	4 49 6	4 52 36	4 56 7	4 59 37	5 3 7	5 6 38
1·7	4 32 10	4 35 28	4 38 46	4 42 5	4 45 23	4 48 41
1·8	4 17 6	4 20 13	4 23 21	4 26 28	4 29 35	4 32 43
1·9	4 3 37	4 6 35	4 9 32	4 12 30	4 15 27	4 18 25
2·0	3 51 28	3 54 17	3 57 6	3 59 55	4 2 44	4 5 32
2·1	3 40 29	3 43 10	3 45 51	3 48 31	3 51 12	3 53 53
2·2	3 30 29	3 33 3	3 35 36	3 38 10	3 40 43	3 43 17
2·3	3 21 21	3 23 48	3 26 15	3 28 42	3 31 9	3 33 36
2·4	3 12 59	3 15 20	3 17 41	3 20 2	3 22 22	3 24 43
2·5	3 5 17	3 7 32	3 9 47	3 12 3	3 14 18	3 16 33

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.																	
	820 Feet.			830 Feet.			840 Feet.			850 Feet.			860 Feet.			870 Feet.		
m.	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″
2·6	2	58	10	3	0	20	3	2	30	3	4	40	3	6	50	3	9	0
2·7	2	51	35	2	53	40	2	55	45	2	57	51	2	59	56	3	2	1
2·8	2	45	28	2	47	28	2	49	29	2	51	30	2	53	31	2	55	32
2·9	2	39	46	2	41	42	2	43	39	2	45	36	2	47	33	2	49	29
3·0	2	34	27	2	36	20	2	38	12	2	40	5	2	41	58	2	43	51
3·1	2	29	28	2	31	17	2	33	7	2	34	56	2	36	45	2	38	34
3·2	2	24	48	2	26	34	2	28	20	2	30	6	2	31	51	2	33	37
3·3	2	20	25	2	22	8	2	23	50	2	25	33	2	27	16	2	28	58
3·4	2	16	18	2	17	57	2	19	37	2	21	17	2	22	56	2	24	36
3·5	2	12	24	2	14	1	2	15	38	2	17	15	2	18	51	2	20	28
3·6	2	8	44	2	10	18	2	11	52	2	13	26	2	15	0	2	16	34
3·7	2	5	15	2	6	47	2	8	18	2	9	50	2	11	22	2	12	53
3·8	2	1	58	2	3	27	2	4	56	2	6	25	2	7	54	2	9	23
3·9	1	58	50	2	0	17	2	1	44	2	3	11	2	4	38	2	6	5
4·0	1	55	52	1	57	17	1	58	41	2	0	6	2	1	31	2	2	56
4·1	1	53	3	1	54	25	1	55	48	1	57	11	1	58	33	1	59	56
4·2	1	50	21	1	51	42	1	53	3	1	54	23	1	55	44	1	57	5
4·3	1	47	47	1	49	6	1	50	25	1	51	44	1	53	3	1	54	21
4·4	1	45	21	1	46	38	1	47	55	1	49	12	1	50	29	1	51	46
4·5	1	43	0	1	44	15	1	45	31	1	46	46	1	48	1	1	49	17
4·6	1	40	46	1	41	59	1	43	13	1	44	27	1	45	41	1	46	54
4·7	1	38	37	1	39	49	1	41	1	1	42	14	1	43	26	1	44	38
4·8	1	36	34	1	37	45	1	38	55	1	40	6	1	41	17	1	42	27
4·9	1	34	36	1	35	45	1	36	54	1	38	3	1	39	13	1	40	22
5·0	1	32	42	1	33	50	1	34	58	1	36	6	1	37	14	1	38	21

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	880 Feet.	890 Feet.	900 Feet.	910 Feet.	920 Feet.	930 Feet.
m.	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
0·1	55 21 33	55 39 40	55 57 32	56 15 7	56 32 26	56 49 29
0·2	35 53 34	36 12 2	36 30 23	36 48 34	37 6 37	37 24 32
0·3	25 45 19	26 0 34	26 15 46	26 30 53	26 45 57	27 0 56
0·4	19 53 32	20 6 1	20 18 28	20 30 53	20 43 16	20 55 37
0·5	16 8 40	16 19 5	16 29 30	16 39 53	16 50 15	17 0 36
0·6	13 33 44	13 42 38	13 51 31	14 0 24	14 9 16	14 18 7
0·7	11 40 56	11 48 41	11 56 25	12 4 8	12 11 52	12 19 34
0·8	10 15 18	10 22 9	10 28 59	10 35 49	10 42 38	10 49 28
0·9	9 8 10	9 14 17	9 20 24	9 26 31	9 32 38	9 38 44
1·0	8 14 8	8 19 40	8 25 13	8 30 44	8 36 16	8 41 48
1·1	7 29 45	7 34 48	7 39 51	7 44 54	7 49 57	7 54 59
1·2	6 52 39	6 57 17	7 1 56	7 6 34	7 11 13	7 15 51
1·3	6 21 11	6 25 28	6 29 46	6 34 3	6 38 21	6 42 38
1·4	5 54 9	5 58 8	6 2 8	6 6 8	6 10 7	6 14 7
1·5	5 30 41	5 34 25	5 38 9	5 41 53	5 45 37	5 49 21
1·6	5 10 8	5 13 38	5 17 9	5 20 39	5 24 9	5 27 39
1·7	4 51 59	4 55 17	4 58 35	5 1 53	5 5 11	5 8 29
1·8	4 35 50	4 38 57	4 42 5	4 45 12	4 48 19	4 51 26
1·9	4 21 22	4 24 20	4 27 17	4 30 15	4 33 12	4 36 10
2·0	4 8 21	4 11 1	4 13 59	4 16 47	4 19 36	4 22 25
2·1	3 56 34	3 59 15	4 1 55	4 4 36	4 7 17	4 9 57
2·2	3 45 51	3 48 24	3 50 58	3 53 31	3 56 5	3 58 38
2·3	3 36 3	3 38 30	3 40 57	3 43 24	3 45 51	3 48 17
2·4	3 27 4	3 29 25	3 31 46	3 34 7	3 36 27	3 38 48
2·5	3 18 48	3 21 4	3 23 19	3 25 34	3 27 49	3 30 4

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.																	
	880 Feet.			890 Feet.			900 Feet.			910 Feet.			920 Feet.			930 Feet.		
m.	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″
2·6	3	11	11	3	13	21	3	15	31	3	17	41	3	19	51	3	22	1
2·7	3	4	7	3	6	12	3	8	17	3	10	22	3	12	28	3	14	33
2·8	2	57	33	2	59	34	3	1	34	3	3	35	3	5	36	3	7	37
2·9	2	51	26	2	53	23	2	55	19	2	57	16	2	59	13	3	1	9
3·0	2	45	44	2	47	37	2	49	29	2	51	22	2	53	15	2	55	8
3·1	2	40	23	2	42	13	2	44	2	2	45	51	2	47	40	2	49	29
3·2	2	35	23	2	37	9	2	38	55	2	40	40	2	42	26	2	44	12
3·3	2	30	41	2	32	24	2	34	6	2	35	49	2	37	31	2	39	14
3·4	2	26	15	2	27	55	2	29	35	2	31	14	2	32	54	2	34	33
3·5	2	22	5	2	23	42	2	25	18	2	26	55	2	28	32	2	30	9
3·6	2	18	8	2	19	42	2	21	17	2	22	51	2	24	25	2	25	59
3·7	2	14	25	2	15	56	2	17	28	2	18	59	2	20	31	2	22	2
3·8	2	10	53	2	12	22	2	13	51	2	15	20	2	16	49	2	18	18
3·9	2	7	31	2	8	58	2	10	25	2	11	52	2	13	19	2	14	46
4·0	2	4	20	2	5	45	2	7	10	2	8	34	2	9	59	2	11	24
4·1	2	1	19	2	2	41	2	4	4	2	5	26	2	6	49	2	8	12
4·2	1	58	25	1	59	46	2	1	7	2	2	27	2	3	48	2	5	9
4·3	1	55	40	1	56	59	1	58	18	1	59	37	2	0	55	2	2	14
4·4	1	53	3	1	54	20	1	55	37	1	56	54	1	58	11	1	59	28
4·5	1	50	32	1	51	47	1	53	3	1	54	18	1	55	33	1	56	49
4·6	1	48	8	1	49	22	1	50	35	1	51	49	1	53	3	1	54	16
4·7	1	45	50	1	47	2	1	48	14	1	49	26	1	50	38	1	51	51
4·8	1	43	38	1	44	48	1	45	59	1	47	10	1	48	20	1	49	31
4·9	1	41	31	1	42	40	1	43	49	1	44	58	1	46	8	1	47	17
5·0	1	39	29	1	40	37	1	41	45	1	42	52	1	44	0	1	45	8

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.																	
	940 Feet.			950 Feet.			960 Feet.			970 Feet.			980 Feet.			990 Feet.		
m.	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″
0·1	57	6	18	57	22	51	57	39	9	57	55	13	58	11	3	58	26	39
0·2	37	42	18	37	59	56	38	17	24	38	34	45	38	51	58	39	9	2
0·3	27	15	52	27	30	43	27	45	31	28	0	14	28	14	54	28	29	29
0·4	21	7	56	21	20	13	21	32	27	21	44	40	21	56	51	22	9	0
0·5	17	10	56	17	21	14	17	31	32	17	41	48	17	52	4	18	2	18
0·6	14	26	58	14	35	48	14	44	37	14	53	25	15	2	13	15	11	0
0·7	12	27	17	12	34	59	12	42	40	12	50	21	12	58	1	13	5	42
0·8	10	56	17	11	3	5	11	9	53	11	16	42	11	23	29	11	30	17
0·9	9	44	51	9	50	56	9	57	2	10	3	8	10	9	13	10	15	18
1·0	8	47	19	8	52	50	8	58	21	9	3	52	9	9	23	9	14	54
1·1	8	0	2	8	5	4	8	10	7	8	15	9	8	20	11	8	25	13
1·2	7	20	29	7	25	7	7	29	45	7	34	23	7	39	1	7	43	38
1·3	6	46	56	6	51	13	6	55	30	6	59	47	7	4	4	7	8	21
1·4	6	18	6	6	22	6	6	26	5	6	30	4	6	34	3	6	38	3
1·5	5	53	5	5	56	49	6	0	32	6	4	16	6	7	59	6	11	43
1·6	5	31	9	5	34	39	5	38	9	5	41	39	5	45	9	5	48	40
1·7	5	11	47	5	15	5	5	18	23	5	21	41	5	24	59	5	28	16
1·8	4	54	33	4	57	40	5	0	47	5	3	54	5	7	1	5	10	8
1·9	4	39	7	4	42	5	4	45	2	4	47	59	4	50	56	4	53	54
2·0	4	25	13	4	28	2	4	30	50	4	33	39	4	36	27	4	39	16
2·1	4	12	38	4	15	19	4	17	59	4	20	40	4	23	21	4	26	1
2·2	4	1	12	4	3	45	4	6	18	4	8	52	4	11	25	4	13	59
2·3	3	50	44	3	53	11	3	55	38	3	58	5	4	0	32	4	2	58
2·4	3	41	9	3	43	30	3	45	51	3	48	11	3	50	32	3	52	53
2·5	3	32	20	3	34	35	3	36	50	3	39	5	3	41	20	3	43	35

VERTICAL DANGER ANGLE.

Distance in Miles & Tenths.	940 Feet.			950 Feet.			960 Feet.			970 Feet.			980 Feet.			990 Feet.		
m.	°	′	″	°	′	″	°	′	″	°	′	″	°	′	″		′	″
2·6	3	24	11	3	26	22	3	28	51	3	30	41	3	32	51	3	35	1
2·7	3	16	38	3	18	43	3	20	49	3	22	54	3	24	59	3	27	4
2·8	3	9	38	3	11	38	3	13	39	3	15	40	3	17	41	3	19	41
2·9	3	3	6	3	5	3	3	6	59	3	8	56	3	10	53	3	12	49
3·0	2	57	0	2	58	53	3	0	46	3	2	39	3	4	32	3	6	24
3·1	2	51	18	2	53	8	2	54	57	2	56	46	2	58	35	3	0	24
3·2	2	45	58	2	47	44	2	49	29	2	51	15	2	53	1	2	54	46
3·3	2	40	57	2	42	39	2	44	22	2	46	4	2	47	47	2	49	29
3·4	2	36	13	2	37	52	2	39	32	2	41	12	2	42	51	2	44	30
3·5	2	31	45	2	33	22	2	34	59	2	36	36	2	38	12	2	39	49
3·6	2	27	33	2	29	7	2	30	41	2	32	15	2	33	49	2	35	23
3·7	2	23	34	2	25	5	2	26	37	2	28	8	2	29	40	2	31	11
3·8	2	19	47	2	21	17	2	22	45	2	24	15	2	25	44	2	27	13
3·9	2	16	13	2	17	39	2	19	6	2	20	33	2	22	0	2	23	27
4·0	2	12	48	2	14	13	2	15	38	2	17	2	2	18	27	2	19	52
4·1	2	9	34	2	10	57	2	12	20	2	13	42	2	15	5	2	16	28
4·2	2	6	29	2	7	50	2	9	11	2	10	31	2	11	52	2	13	13
4·3	2	3	33	2	4	52	2	6	11	2	7	29	2	8	48	2	10	7
4·4	2	0	45	2	2	2	2	3	19	2	4	36	2	5	52	2	7	10
4·5	1	58	4	1	59	19	2	0	34	2	1	50	2	3	5	2	4	20
4·6	1	55	30	1	56	44	1	57	57	1	59	11	2	0	25	2	1	38
4·7	1	53	3	1	54	15	1	55	27	1	56	39	1	57	51	1	59	3
4·8	1	50	41	1	51	52	1	53	3	1	54	13	1	55	24	1	56	34
4·9	1	48	26	1	49	35	1	50	44	1	51	53	1	53	3	1	54	12
5·0	1	46	16	1	47	24	1	48	32	1	49	39	1	50	47	1	51	55

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.					
	1000 Feet.					
m.	° ′ ″					
0·1	58 42 1					
0·2	39 25 58					
0·3	28 44 1					
0·4	22 21 6					
0·5	18 12 30					
0·6	15 19 46					
0·7	13 13 21					
0·8	11 37 4					
0·9	10 21 23					
1·0	9 20 24					
1·1	8 30 14					
1·2	7 48 16					
1·3	7 12 39					
1·4	6 42 2					
1·5	6 15 27					
1·6	5 52 9					
1·7	5 31 34					
1·8	5 13 15					
1·9	4 56 51					
2·0	4 42 4					
2·1	4 28 42					
2·2	4 16 32					
2·3	4 5 25					
2·4	3 55 13					
2·5	3 45 51					

Distance in Miles & Tenths.	VERTICAL DANGER ANGLE.							
	1000 Feet.							
m.	°	′	″					
2·6	3	37	11					
2·7	3	29	9					
2·8	3	21	42					
2·9	3	14	46					
3·0	3	8	17					
3·1	3	2	13					
3·2	2	56	32					
3·3	2	51	12					
3·4	2	46	10					
3·5	2	41	26					
3·6	2	36	57					
3·7	2	32	43					
3·8	2	28	42					
3·9	2	24	54					
4·0	2	21	17					
4·1	2	17	50					
4·2	2	14	33					
4·3	2	11	26					
4·4	2	8	27					
4·5	2	5	36					
4·6	2	2	52					
4·7	2	0	15					
4·8	1	57	45					
4·9	1	55	21					
5·0	1	53	3					

PART II.

EXPLANATORY.

THE Tables in Part II. comprise heights from 200 to 18,000 feet, and distances from five miles up to one hundred miles. They are intended to be used with objects lying *beyond* the horizon, and, unlike the requirement in Part I., it is desirable, on account of refraction and undulations of the horizon, that the observer should place himself as high as he can conveniently get, say anything between 20 and 35 feet; though, where the shore line is close to, and the water smooth, it may be necessary to descend even to 6 or 8 feet to secure a true horizon.

To ascertain the distance from a mountain of given height, take its angular altitude above the *horizon*, and, to ensure accuracy, do not omit to use the telescope. Then, having applied the index error, subtract the true depression corresponding to the height of the eye, and also $\frac{1}{12}$ of the roughly estimated distance from the mountain. Under the result, as a corrected altitude, and opposite the height of the summit in the left-hand margin of the Tables, will be found a very close approximation to the true distance.

Generally it will be sufficient, when the height exceeds a couple of thousand feet, to take it out to the nearest hundred feet; but not the least advantage of tables is that one sees at a glance the change produced in the result by any inaccuracy in the data.

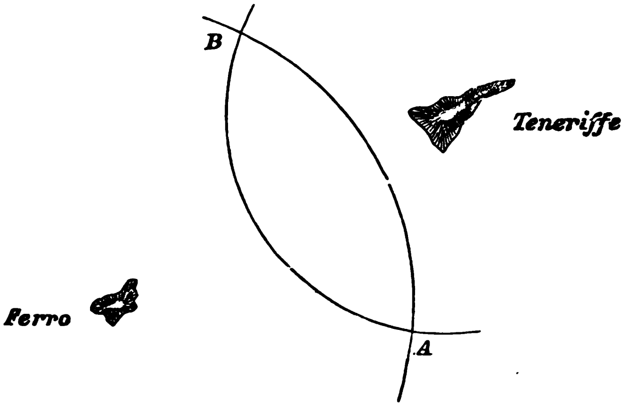
Table of *true dip* due solely to curvature of the earth's surface :—

Height of eye in feet.	True Depr.	Height of eye in feet.	True Depr.	Height of eye in feet.	True Depr.	Height of eye in feet.	True Depr.
	′ ″		′ ″		′ ″		′ ″
1	1 4	11	3 32	21	4 52	31	5 55
2	1 30	12	3 41	22	4 59	32	6 1
3	1 51	13	3 50	23	5 6	33	6 6
4	2 8	14	3 59	24	5 12	34	6 12
5	2 23	15	4 7	25	5 19	35	6 17
6	2 36	16	4 15	26	5 25	36	6 23
7	2 49	17	4 23	27	5 31	37	6 28
8	3 0	18	4 31	28	5 38	38	6 33
9	3 11	19	4 38	29	5 44	39	6 38
10	3 22	20	4 45	30	5 49	40	6 43

One-twelfth of the distance referred to in the foregoing instructions is a correction for the effect of refraction, which does not vitiate the result as much as might be supposed, on account of the summit being affected as well as the horizon, though generally in a different degree, being at a greater distance. If the estimated distance be even considerably from the truth, the result will not be much affected by the mistake—an error of twelve or thirteen miles affecting the corrected angle to the amount of only 1′. But to secure as much accuracy as the method is capable of, it will be advisable, when the estimated distance has been found to be *very* wide of the mark, to repeat the process, using $\frac{1}{12}$ of the *last found* distance.

Of course, by taking a bearing simultaneously with the angle, the ship's position can be fixed with the minimum of trouble.

The distances from two mountains bearing differently—the nearer to 8 points the better—shows very correctly the position of the ship without having recourse to a bearing, provided the distances be not very great, or the angles small. The greater the angle, the *truer will be the* result. On the other hand, when the distance is excessive, or the altitude very small, the irregular refraction near the horizon will render the deduced position less reliable.



Let the diagram be supposed to represent any two neighbouring islands—say Ferro and Tenerife, both of which are lofty—and let the arcs of circles represent their respective distances from the ship. Then the latter must either be at *A* or at *B;* and it is almost needless to say there can be no difficulty in deciding which.

In every case, when using these Tables (Part II.), there must be a true horizon between the observer and the summit: to obtain this, when the shore-line happens to be nearer than four miles, the observer's eye must not exceed 11 feet.

It matters not what high land intervenes, if the summit in question can be seen over it.

When in the vicinity of high land during the night, it is frequently impossible even to guess at the distance from it, especially when the moon is behind the land, although the horizon may be sufficiently clear in that direction: in such cases the Tables may be used with advantage.

EXAMPLES.

Example 1.—The altitude of a mountain-top above the horizon was (corrected for index error) 1° 16′; height of summit, 4,200 feet; eye elevated, 14 feet; estimated distance to mountain, 25 miles; required its actual distance.

Angle - - - 1° 16′
Dep. for 14 ft. — 4
1° 12′
$\frac{1}{12}$ of dist. - - — 2
1° 10′—Under this angle, and opposite 4,200 feet, will be found 28′·2, the distance required.

Example 2.—When the distance is great, it may sometimes be difficult to estimate it; in such case, or indeed in any case where the allowance for distance affects the result, you may proceed as follows:—

The angle between a summit, elevated 5,400 feet above the sea, and the horizon was (corrected for index error) 0° 43½′; height of eye, 14 feet; distance of summit not estimated; required its distance.

Altitude - - - 0° 43½′
Dep. for 14 feet - — 4
0° 39½—Under this angle, and opposite 5,400 feet, is 48 miles, which call an estimated distance; one-twelfth of do. being 4, subtracted from 0° 39½′, leaves 0° 35½′ for corrected altitude—under which, and opposite 5,400 feet, will be found 50·3 miles, the true distance required.

NOTE.—The Tables will be found a useful check on a position determined by cross-bearings.

It is now necessary to call attention to a point in connection with laying down a ship's position on the chart from the known distance and observed bearing of a distant object, or from cross-bearings of two or more distant objects.

Owing to the principles of Mercator's projection, *observed bearings, with* two exceptions about to be mentioned, are never identical with bearings *taken from the chart.* The first exception is when the bearing happens to be either due North or due South, in which case it matters not at what part of the globe the observer may be situated; and the second is when the object bears due East or West on the Equator. Ordinarily, the difference is not great, and may be disregarded; but, in high latitudes, it must be taken into consideration when it is required to obtain an accurate position from the observed bearing and distance of a mountain very far away, or from cross-bearings under similar conditions—unless, as already stated, the bearings should lie near the North or South points (true).

To get a more exact position when the distance is very great, proceed as follows:—Find the ship's approximate position from the Tables in the way previously described, and prick it off on the chart. Measure the difference of longitude between this position and the mountain observed upon—also find the Middle Latitude: then to the Log. sine (four places of figures will be near enough) of *half* the difference of longitude, add the Log. sine of the Middle Latitude: the sum is the Log. sine of the correction required. Apply the correction towards the Equatorial side of the *observed* bearing.

Lay off this corrected bearing on the chart, using either Field's parallel ruler or an ordinary protractor, and, with the same distance as before, prick off the ship's true position. As a check against mistakes, remember that the *corrected bearing*, when laid down, will always place the observer in a somewhat higher latitude than the *observed bearing* would.

EXAMPLE.

This is an extreme case by way of illustration, and the bearing is therefore purposely chosen near the East and West points.

An observer on the summit of Sca Fell, in Cumberland, finds by theodolite the true bearing of Slieve Donard, in Ireland, to be S. 81° 17′ 26″ W., distant 94 miles. He requires to know what the bearing would be on a Mercator's chart showing these two mountains :—

Sca Fell........	54° 27′ N.	3° 13′ W.
Slieve Donard..	54 11 N.	5 55 W.
2)	108 38	2 24
		60
Middle Latitude	54° 19′	162′ diff. of Longitude.

Half diff. of longitude, 81′, sine	8·3722	True or obs. bearing	S. 81° 17′ 26″ W.
Middle latitude, 54° 19′, sine ..	9·9097	Correction ..	— 1 5 48
Correction, 1° 5′ 48″, sine	8·2819	Bearing by chart ..	S. 80° 11′ 38″ W.

Here the difference in bearing, though but little more than a degree, would, owing to the great distance, cause an error in the observer's place of nearly two miles.

EXAMPLE.

This is an ordinary case, where the bearing is about midway between the adjacent cardinal points, the distance not very great, and the latitude not high.

An observer in Latitude 27° 39′ N., and Longitude 16° 0′ W., finds the *observed* true bearing of the Peak of Tenerife to be N. 41° 19′ 9″ W., and distant by the Tables nearly 51 miles. He requires to know what bearing he must lay-off *on the chart* to fix his exact position.

Peak of Tenerife -	28° 17′ N. - - -	16° 38′ W.
Ship - - - - - -	27 39 N. - - -	16 00 W.
2)	55 56	38′ diff. of Longitude.
Middle Latitude -	27° 58′ N.	

½ diff. of Longitude, 19′ - - - - - -	sine 7·7425	True or observed bearing - - -	N. 41° 19′ 9″ W.
Middle Latitude, 27° 58′	sine 9·6711	Correction - - -	+ 8 55
Correction, 0° 8′ 55″ -	sine 7·4136	Bearing by chart -	N. 41° 28′ 4″ W.

Here the correction is so small as to be inappreciable; from which we conclude that it may be safely neglected under ordinary circumstances, of which the observer—guided by the principles here set forth—must himself be the judge.

CONCLUDING EXAMPLE.

An inward bound steamer passes Point Lynas distant one mile, the height of the light being 128 feet, and the vertical angle when abeam = 1° 13′ 30″. The course was then shaped S. 80° E. (C.M.) for the North-West Lightship, 3° being allowed for the set-in of the flood. Some 10¾ miles after passing Lynas—Penmaen Mawr (1,540 feet) then being abeam—its angular altitude was measured as 1° 11′, height of eye being 22 feet: the result—12′·3 miles—shewed the intended course to have been made good. Some four miles further on, Great Orme Head (676 feet) came abeam, and its angular altitude (0° 47′ 45″) was also measured as a check. The resulting distance—8′·4 miles—was equally satisfactory. Shortly after this last 'fix,' a dense fog came on—the wind being S.E.; but, being well assured of their position and speed, the captain and pilot held on with confidence, and in due time were guided to the lightship by the steam fog-trumpet, after which they proceeded slowly with Lead going for the Bar Lightship. A shift of wind caused the fog to lift, and they just succeeded in saving the tide into dock.

PART II. (A.)

HEIGHTS FROM 200 TO 6000 FEET.

DISTANCES FROM FIVE TO SEVENTY MILES.

PART II. (A.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 10′	0° 11′	0° 12′	0° 13′	0° 14′	0° 15′	0° 16′	0° 17′	0° 18′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
200	8·1	7·7	7·3	6·9	6·5	6·2	6·0	5·7	5·5
300	11·0	10·5	10·0	9·5	9·1	8·8	8·4	8·0	7·7
400	13·5	13·0	12·4	11·9	11·5	11·0	10·6	10·2	9·9
500	15·8	15·2	14·6	14·1	13·6	13·1	12·6	12·2	11·8
600	18·0	17·3	16·7	16·1	15·6	15·1	14·6	14·1	13·7
700	19·8	19·2	18·6	18·0	17·4	16·9	16·4	15·9	15·4
800	21·7	21·0	20·4	19·8	19·2	18·6	18·1	17·6	17·1
900	23·4	22·7	22·1	21·5	20·8	20·2	19·7	19·2	18·7
1000	25·1	24·4	23·7	23·0	22·4	21·8	21·2	20·6	20·1
1100	26·6	25·9	25·2	24·5	23·9	23·3	22·7	22·1	21·5
1200	28·2	27·4	26·7	26·0	25·4	24·8	24·2	23·6	23·0
1300	29·6	28·8	28·1	27·4	26·8	26·1	25·5	24·9	24·3
1400	31·0	30·2	29·5	28·8	28·2	27·5	26·9	26·3	25·7
1500	32·3	31·5	30·8	30·1	29·5	28·8	28·2	27·5	26·9
1600	33·7	32·9	32·2	31·5	30·8	30·1	29·5	28·8	28·2
1700	34·9	34·1	33·4	32·7	32·0	31·3	30·7	30·0	29·4
1800	36·2	35·4	34·7	33·9	33·2	32·5	31·9	31·2	30·6
1900	37·4	36·6	35·9	35·1	34·4	33·7	33·1	32·4	31·8
2000	38·6	37·8	37·0	36·3	35·6	34·9	34·2	33·5	32·9
2100	39·8	39·0	38·2	37·4	36·7	36·0	35·3	34·6	34·0
2200	40·9	40·1	39·3	38·5	37·8	37·1	36·4	35·7	35·0
2300	42·0	41·2	40·4	39·6	38·9	38·2	37·5	36·8	36·1
2400	43·0	42·2	41·4	40·6	39·9	39·2	38·5	37·8	37·1
2500	44·1	43·3	42·5	41·7	41·0	40·2	39·5	38·8	38·1
2600	45·1	44·3	43·5	42·7	42·0	41·2	40·5	39·8	39·1
2700	46·1	45·3	44·5	43·7	43·0	42·2	41·5	40·8	40·1
2800	47·1	46·3	45·5	44·7	44·0	43·2	42·5	41·8	41·1
2900	48·1	47·3	46·5	45·7	45·0	44·2	43·5	42·8	42·1
3000	49·1	48·3	47·5	46·7	45·9	45·2	44·4	43·7	43·0

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 10′	0° 11′	0° 12′	0° 13′	0° 14′	0° 15′	0° 16′	0° 17′	0° 18′
	m.	m.	m	m.	m.	m.	m.	m.	m.
3100	50·1	49·2	48·4	47·6	46·8	46·1	45·3	44·6	43·9
3200	51·0	50·1	49·3	48·5	47·7	46·9	46·2	45·5	44·8
3300	51·9	51·1	50·3	49·5	48·7	47·9	47·1	46·4	45·7
3400	52·8	52·0	51·2	50·4	49·6	48·8	48·0	47·3	46·6
3500	53·7	52·9	52·1	51·3	50·5	49·7	48·9	48·2	47·5
3600	54·6	53·7	52·9	52·1	51·3	50·6	49·8	49·0	48·3
3700	55·5	54·6	53·8	53·0	52·2	51·4	50·7	49·9	49·2
3800	56·3	55·5	54·6	53·8	53·0	52·2	51·5	50·7	50·0
3900	57·2	56·3	55·5	54·7	53·9	53·1	52·3	51·5	50·8
4000	58·0	57·1	56·3	55·5	54·7	53·9	53·1	52·3	51·6
4100	58·8	57·9	57·1	56·3	55·5	54·7	53·9	53·1	52·4
4200	59·6	58·7	57·9	57·1	56·3	55·5	54·7	53·9	53·2
4300	60·4	59·5	58·7	57·9	57·1	56·3	55·5	54·7	54·0
4400	61·2	60·3	59·5	58·7	57·9	57·1	56·3	55·5	54·8
4500	62·0	61·1	60·3	59·5	58·7	57·9	57·1	56·3	55·6
4600	62·8	61·9	61·1	60·2	59·4	58·6	57·8	57·1	56·3
4700	63·6	62·7	61·9	61·0	60·2	59·4	58·6	57·8	57·1
4800	64·3	63·5	62·6	61·8	61·0	60·2	59·4	58·6	57·8
4900	65·1	64·2	63·4	62·6	61·8	61·0	60·2	59·4	58·6
5000	65·8	65·0	64·1	63·3	62·5	61·7	60·9	60·1	59·3
5100	66·6	65·7	64·9	64·0	63·2	62·4	61·6	60·8	60·0
5200	67·3	66·4	65·6	64·8	63·9	63·1	62·3	61·5	60·7
5300	68·1	67·2	66·3	65·5	64·7	63·8	63·0	62·2	61·5
5400	68·8	67·9	67·0	66·2	65·4	64·5	63·7	62·9	62·2
5500	69·5	68·6	67·8	66·9	66·1	65·2	64·4	63·6	62·9
5600	70·2	69·3	68·5	67·6	66·8	65·9	65·1	64·3	63·6
5700		70·0	69·2	68·3	67·5	66·6	65·8	65·0	64·2
5800			69·8	69·0	68·1	67·3	66·5	65·7	64·9
5900			70·5	69·6	68·8	68·0	67·2	66·4	65·6
6000				70·3	69.5	68·7	67·9	67·1	66·3

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 19′	**0° 20′**	**0° 21′**	**0° 22′**	**0° 23′**	**0° 24′**	**0° 25′**	**0° 26′**	**0° 27′**
	m.	m.	m.	m.	m.	m.	m.	m.	m.
200	5·2	5·0							
300	7·5	7·2	6·9	6·7	6·4	6·2	6·0	5·9	5·7
400	9·5	9·2	8·9	8·6	8·3	8·1	7·8	7·6	7·4
500	11·4	11·1	10·7	10·4	10·1	9·8	9·5	9·2	9·0
600	13·3	12·9	12·5	12·1	11·7	11·4	11·1	10·8	10·5
700	15·0	14·5	14·1	13·7	13·3	13·0	12·6	12·3	12·0
800	16·6	16·1	15·6	15·2	14·9	14·5	14·1	13·7	13·4
900	18·2	17·7	17·2	16·7	16·3	15·9	15·5	15·1	14·8
1000	19·6	19·1	18·6	18·2	17·7	17·3	16·9	16·5	16·1
1100	21·0	20·5	20·0	19·5	19·0	18·6	18·2	17·8	17·4
1200	22·4	21·9	21·4	20·9	20·4	20·0	19·5	19·1	18·7
1300	23·7	23·2	22·7	22·2	21·7	21·2	20·7	20·3	19·8
1400	25·1	24·5	24·0	23·5	23·0	22·5	22·0	21·5	21·0
1500	26·3	25·7	25·2	24·7	24·1	23·6	23·1	22·6	22·1
1600	27·6	27·0	26·4	25·9	25·3	24·8	24·3	23·8	23·3
1700	28·8	28·2	27·6	27·0	26·4	25·9	25·4	24·9	24·4
1800	30·0	29·4	28·8	28·2	27·6	27·1	26·6	26·1	25·6
1900	31·1	30·5	29·9	29·3	28·7	28·2	27·7	27·2	26·6
2000	32·2	31·6	31·0	30·4	29·8	29·3	28·7	28·2	27·7
2100	33·3	32·7	32·1	31·5	30·9	30·4	29·8	29·2	28·7
2200	34·3	33·7	33·1	32·5	31·9	31·4	30·8	30·2	29·7
2300	35·4	34·8	34·2	33·6	33·0	32·4	31·8	31·2	30·7
2400	36·4	35·8	35·2	34·6	34·0	33·4	32·8	32·2	31·6
2500	37·5	36·8	36·2	35·6	35·0	34·4	33·8	33·2	32·6
2600	38·4	37·8	37·1	36·5	35·9	35·3	34·7	34·1	33·8
2700	39·4	38·8	38·1	37·5	36·9	36·3	35·7	35·1	34·5
2800	40·3	39·7	39·0	38·4	37·8	37·2	36·6	36·0	35·5
2900	41·4	40·7	40·0	39·3	38·7	38·1	37·5	36·9	36·3
3000	42·3	41·6	40·9	40·2	39·6	39·0	38·4	37·8	37·2

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 19′	0° 20′	0° 21′	0° 22′	0° 23′	0° 24′	0° 25′	0° 26′	0° 27′
	m.	m.	m	m.	m.	m.	m.	m.	m.
3100	43·2	42·5	41·8	41·1	40·5	39·9	39·3	38·7	38·1
3200	44·1	43·4	42·7	42·0	41·4	40·8	40·1	39·5	38·9
3300	45·0	44·3	43·6	42·9	42·3	41·7	41·0	40·4	39·8
3400	45·8	45·1	44·5	43·8	43·1	42·5	41·8	41·2	40·6
3500	46·7	46·0	45·3	44·7	44·0	43·4	42·7	42·1	41·4
3600	47·5	46·8	46·1	45·5	44·8	44·2	43·5	42·9	42·2
3700	48·4	47·7	47·0	46·3	45·6	45·0	44·3	43·7	43·1
3800	49·2	48·5	47·8	47·1	46·4	45·8	45·1	44·5	43·9
3900	50·0	49·3	48·6	47·9	47·2	46·6	45·9	45·3	44·7
4000	50·8	50·1	49·4	48·7	48·0	47·4	46·7	46·1	45·4
4100	51·6	50·9	50·2	49·5	48·8	48·2	47·5	46·9	46·2
4200	52·4	51·7	51·0	50·3	49·6	48·9	48·2	47·6	47·0
4300	53·2	52·5	51·8	51·1	50·4	49·7	49·0	48·4	47·8
4400	54·0	53·3	52·6	51·9	51·2	50·5	49·8	49·2	48·5
4500	54·8	54·1	53·4	52·7	52·0	51·3	50·6	49·9	49·3
4600	55·6	54·8	54·1	53·4	52·7	52·0	51·3	50·7	50·0
4700	56·3	55·6	54·9	54·2	53·5	52·8	52·1	51·4	50·7
4800	57·1	56·3	55·6	54·9	54·2	53·5	52·8	52·1	51·4
4900	57·8	57·1	56·3	55·6	54·9	54·2	53·5	52·8	52·1
5000	58·5	57·8	57·0	56·3	55·6	54·9	54·2	53·5	52·8
5100	59·2	58·5	58·7	57·0	56·3	55·6	54·9	54·2	53·5
5200	59·9	59·2	58·5	57·7	57·0	56·3	55·6	54·9	54·2
5300	60·7	59·9	59·2	58·5	57·7	57·0	56·3	55·6	54·9
5400	61·4	60·6	59·9	59·2	58·4	57·7	57·0	56·3	55·6
5500	62·1	61·3	60·6	59·9	59·1	58·4	57·7	57·0	56·3
5600	62·8	62·0	61·2	60·5	59·8	59·1	58·4	57·7	57·0
5700	63·5	62·7	61·9	61·2	60·5	59·8	59·1	58·4	57·7
5800	64·1	63·4	62·6	61·9	61·1	60·4	59·7	59·0	58·4
5900	64·8	64·1	63·3	62·6	61·8	61·1	60·4	59·7	59·0
6000	65·5	64·7	64·0	63·2	62·5	61·8	61·1	60·4	59·7

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 28′	0° 29′	0° 30′	0° 31′	0° 32′	0° 33′	0° 34′	0° 35′	0° 36′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
300	5·5	5·4	5·2	5·0					
400	7·2	7·0	6·8	6·6	6·4	6·2	6·1	6·0	5·8
500	8·7	8·5	8·3	8·1	7·9	7·7	7·5	7·3	7·1
600	10·1	9·8	9·6	9·4	9·2	9·0	8·9	8·7	8·5
700	11·7	11·3	11·1	10·8	10·6	10·3	10·1	9·9	9·7
800	13·1	12·8	12·5	12·2	11·9	11·7	11·4	11·2	10·9
900	14·5	14·1	13·8	13·5	13·2	12·9	12·6	12·3	12·1
1000	15·7	15·3	15·0	14·7	14·4	14·1	13·9	13·6	13·3
1100	17·0	16·6	16·3	16·0	15·7	15·3	15·0	14·7	14·4
1200	18·3	17·8	17·5	17·1	16·8	16·4	16·1	15·8	15·5
1300	19·4	19·1	18·7	18·3	17·9	17·5	17·2	16·9	16·6
1400	20·6	20·2	19·8	19·4	19·0	18·7	18·3	18·0	17·6
1500	21·7	21·4	21·0	20·5	20·1	19·7	19·4	19·0	18·7
1600	22·9	22·4	22·0	21·6	21·2	20·8	20·5	20·1	19·8
1700	24·0	23·6	23·2	22·7	22·3	21·8	21·4	21·0	20·7
1800	25·1	24·7	24·2	23·7	23·3	22·9	22·5	22·1	21·7
1900	26·1	25·8	25·2	24·7	24·3	23·9	23·5	23·1	22·7
2000	27·2	26·7	26·2	25·7	25·2	24·8	24·4	24·0	23·7
2100	28·2	27·8	27·2	26·7	26·3	25·9	25·5	25·1	24·6
2200	29·2	28·7	28·2	27·7	27·2	26·8	26·3	25·9	25·5
2300	30·2	29·7	29·2	28·7	28·2	27·8	27·3	26·9	26·4
2400	31·1	30·6	30·1	29·6	29·1	28·7	28·2	27·8	27·3
2500	32·1	31·5	31·0	30·6	30·1	29·6	29·1	28·7	28·2
2600	33·9	32·5	32·0	31·5	31·0	30·5	30·0	29·6	29·1
2700	34·0	33·0	32·9	32·4	31·9	31·4	30·9	30·4	30·0
2800	34·9	34·3	33·8	33·2	32·7	32·2	31·8	31·3	30·8
2900	35·8	35·1	34·6	34·1	33·6	33·1	32·6	32·1	31·6
3000	36·6	36·0	35·5	35·0	34·5	34·0	33·4	32·9	32·4

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 28′	0° 29′	0° 30′	0° 31′	0° 32′	0° 33′	0° 34′	0° 35′	0° 36′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
3100	37·5	36·9	36·4	35·8	35·3	34·8	34·3	33·8	33·3
3200	38·3	37·7	37·2	36·6	36·1	35·6	35·1	34·6	34·1
3300	39·2	38·6	38·0	37·4	36·9	36·4	35·9	35·4	34·9
3400	40·0	39·4	38·8	38·3	37·7	37·2	36·6	36·2	35·7
3500	40·8	40·2	39·6	39·1	38·6	38·0	37·5	37·0	36·5
3600	41·6	41·0	40·5	39·8	39·4	38·8	38·3	37·8	37·3
3700	42·5	41·9	41·3	40·7	40·1	39·6	39·1	38·6	38·1
3800	43·3	42·7	42·1	41·5	40·9	40·3	39·8	39·3	38·8
3900	44·1	43·5	42·9	42·3	41·7	41·1	40·6	40·1	39·5
4000	44·8	44·2	43·6	43·1	42·5	41·9	41·3	40·8	40·3
4100	45·6	45·0	44·4	43·8	43·3	42·7	42·1	41·5	41·0
4200	47·4	45·8	45·2	44·6	44·0	43·4	42·8	42·3	41·7
4300	47·2	46·5	45·9	45·3	44·7	44·1	43·6	43·0	42·5
4400	47·9	47·2	46·6	46·0	45·4	44·8	44·3	43·7	43·2
4500	48·7	48·0	47·4	46·8	46·2	45·6	45·0	44·4	43·9
4600	49·4	48·7	48·1	47·5	46·9	46·3	45·7	45·1	44·6
4700	50·1	49·4	48·8	48·2	47·6	47·0	46·4	45·8	45·3
4800	50·8	50·1	49·5	48·9	48·3	47·7	47·1	46·5	46·0
4900	51·5	50·8	50·2	49·6	49·0	48·4	47·8	47·2	46·6
5000	52·2	51·5	50·9	50·3	49·7	49·1	48·5	47·9	47·3
5100	52·9	52·2	51·6	51·0	50·4	49·8	49·2	48·6	48·0
5200	53·6	52·9	52·3	51·7	51·1	50·4	49·8	49·3	48·7
5300	54·3	53·6	53·0	52·4	51·8	51·1	50·5	49·9	49·4
5400	55·0	54·3	53·7	53·0	52·4	51·8	51·2	50·6	50·0
5500	55·7	55·0	54·4	53·7	53·1	52·5	51·9	51·3	50·7
5600	56·3	55·6	55·0	54·4	53·7	53·1	52·5	51·9	51·3
5700	57·0	56·3	55·7	55·0	54·4	53·8	53·2	52·6	52·0
5800	57·7	57·0	56·3	55·7	55·1	54·4	53·8	53·2	52·6
5900	58·4	57·7	57·0	56·3	55·7	55·1	54·5	53·9	53·3
6000	59·0	58·3	57·6	56·9	56·3	55·7	55·1	54·5	53·9

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 37′	0° 38′	0° 39′	0° 40′	0° 41′	0° 42′	0° 43′	0° 44′	0° 45′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
400	5·7	5·6	5·4	5·3	5·2	5·1	5 0		
500	7·0	6·8	6·7	6·5	6·4	6·3	6·1	6·0	5·9
600	8·3	8·1	7·9	7·7	7·5	7·4	7·2	7·1	7·0
700	9·5	9·3	9·1	8·9	8·7	8·5	8·3	8·2	8·1
800	10·7	10·5	10·2	10·0	9·8	9·6	9·5	9·4	9·2
900	11·9	11·7	11·4	11·2	11·0	10·8	19·6	10·4	10·2
1000	13·0	12·7	12·5	12·3	12·0	11·8	11·6	11·4	11·2
1100	14·1	13·8	13·5	13·3	13·1	12·9	12·6	12·4	12·2
1200	15·2	14·9	14·6	14·4	14·1	13·9	13·6	13·4	13·1
1300	16·3	16·0	15·7	15·4	15·1	14·9	14·6	14·3	14·1
1400	17·3	17·0	16·7	16·4	16·1	15·8	15·5	15·3	15·0
1500	18·3	18·0	17·7	17·4	17·1	16·9	16·6	16·3	16·0
1600	19·4	19·0	18·7	18·4	18·1	17·8	17·5	17·2	17·0
1700	20·3	20·0	19·7	19·4	19·1	18·8	18·4	18·1	17·8
1800	21·3	21·0	20·6	20·3	20·0	19·6	19·3	19·0	18·7
1900	22·3	21·9	21·5	21·2	20·9	20·6	20·3	19·9	19·6
2000	23·3	22·9	22·5	22·2	21·8	21·5	21·1	20·8	20·4
2100	24·2	23·8	23·4	23·0	22·7	22·4	22·0	21·7	21·3
2200	25·1	24·7	24·3	23·9	23·5	23·2	22·8	22·5	22·2
2300	26·0	25·6	25·2	24·8	24·4	24·1	23·7	23·4	23·0
2400	26·9	26·5	26·1	25·7	25·3	24·9	24·5	24·2	23·8
2500	27·8	27·4	27·0	26·5	26·1	25·8	25·4	25·0	24·6
2600	28·7	28·2	27·7	27·3	26·9	26·6	26·2	25·8	25·4
2700	29·5	29·1	28·6	28·2	27·8	27·4	27·0	26·6	26·2
2800	30·3	29·9	29·4	29·0	28·6	28·2	27·9	27·5	27·1
2900	*31 1*	30·6	30·2	29·9	29·5	29·0	28·6	28·2	27·8
3000	*31·9*	*31·4*	31·0	30·6	30·2	29·8	29·4	29·0	28·6

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 37′	0° 38′	0° 39′	0° 40′	0° 41′	0° 42′	0° 43′	0° 44′	0° 45′
	m.	m.	m	m.	m.	m.	m.	m.	m.
3100	32·8	32·3	31·8	31·4	31·0	30·6	30·2	29·8	29·4
3200	33·6	33·1	32·7	32·2	31·7	31·3	30·9	30·5	30·1
3300	34·4	33·9	33·4	33·0	32·5	32·1	31·7	31·3	30·9
3400	35·2	34·7	34·2	33·8	33·3	32·9	32·4	32·0	31·6
3500	36·0	35·5	35·0	34·5	34·1	33·6	33·2	32·7	32·3
3600	36·8	36·3	35·8	35·3	34·8	34·4	33·9	33·5	33·0
3700	37·6	36·1	36·6	36·1	35·6	35·1	34·6	34·2	33·8
3800	38·3	37·8	37·3	36·8	36·3	35·8	35·4	34·9	34·5
3900	39·0	38·5	38·0	37·5	37·0	36·6	36·1	35·7	35·2
4000	39·7	39·2	38·7	38·2	37·7	37·3	36·8	36·4	35·9
4100	40·5	40·0	39·5	39·0	38·5	38·0	37·5	37·0	36·6
4200	41·2	40·7	40·2	39·7	39·2	38·7	38·2	37·7	37·2
4300	41·9	41·4	40·9	40·4	39·9	39·4	38·9	38·4	38·0
4400	42·6	42·1	41·6	41·1	40·6	40·1	39·6	39·1	38·6
4500	43·3	42·8	42·3	41·8	41·3	40·8	40·3	39·8	39·4
4600	44·0	43·5	43·0	42·5	41·9	41·4	41·0	40·5	40·0
4700	44·7	44·2	43·7	43·2	42·6	42·1	41·6	41·2	40·7
4800	45·4	44·9	44·3	43·8	43·3	42·8	42·3	41·8	41·3
4900	46·1	45·6	45·0	44·5	44·0	43·5	43·0	42·5	42·0
5000	46·7	46·2	45·7	45·2	44·6	44·1	43·6	43·1	42·6
5100	47·4	46·9	46·4	45·8	45·3	44·8	44·3	43·8	43·3
5200	48·1	47·6	47·0	46·5	45·9	45·4	44·9	44·4	43·9
5300	48·8	48·2	47·7	47·2	46·6	46·1	45·6	45·1	44·6
5400	49·5	48·9	48·3	47·8	47·3	46·7	46·2	45·7	45·2
5500	50·1	49·6	49·0	48·4	47·9	47·4	46·8	46·3	45·8
5600	50·7	50·2	49·6	49·0	48·5	48·0	47·4	46·9	46·4
5700	51·4	50·8	50·2	49·7	49·1	48·6	48·0	47·5	47·0
5800	52·0	51·4	50·8	50·3	49·7	49·2	48·6	48·1	47·6
5900	52·7	52·1	51·5	50·9	50·3	49·8	49·2	48·7	48·2
6000	*53·3*	*52·7*	52·1	51·5	50·9	50·4	49·8	49·3	48·8

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 46′	0° 47′	0° 48′	0° 49′	0° 50′	0° 51′	0° 52′	0° 53′	0° 54′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
500	5·8	5·7	5·6	5·5	5·4	5·3	5·2	5·1	5·0
600	6·9	6·8	6·7	6·5	6·4	6·3	6·2	6·1	6·0
700	7·9	7·8	7·7	7·5	7·4	7·2	7·1	7·0	6·9
800	9·0	8·8	8·6	8·4	8·4	8·3	8 1	7·9	7·8
900	10·0	9·8	9·6	9·4	9·3	9·1	9·0	8·9	8·8
1000	11·0	10·8	10·6	10·3	10·2	10·0	9·9	9·7	9·6
1100	12·0	11·8	11·6	11·3	11·2	11·0	10·8	10·6	10·5
1200	12·9	12·7	12·5	12·2	12·1	12·0	11·8	11·6	11·4
1300	13·9	13·6	13·4	13·2	13·0	12·9	12·7	12·4	12·2
1400	14·8	14·6	14·3	14·0	13·8	13·6	13·4	13·2	13·0
1500	15·8	15·5	15·2	15·0	14·8	14·6	14·5	14·2	13·9
1600	16·7	16·4	16·1	15·8	15·6	15·4	15·2	14·9	14·7
1700	17·5	17·2	17·0	16·8	16·8	16·3	16·0	15·8	15·6
1800	18·5	18·2	17·9	17·6	17·3	17·1	16·9	16·6	16·3
1900	19·3	19·0	18·8	18·5	18·2	17·9	17 6	17·4	17·2
2000	20·1	19·8	19·6	19·3	19·0	18·7	18·4	18·1	17·9
2100	21·0	20·7	20·4	20·1	19·8	19·5	19·3	19·0	18·7
2200	21·9	21·5	21·2	20·9	20·6	20·3	20·1	19·8	19·5
2300	22·7	22·3	22·0	21·7	21·4	21·1	20·8	20·5	20·2
2400	23·4	23·1	22·8	22·5	22·2	21·8	21·5	21·2	21·0
2500	24·3	24·0	23·7	23·3	23·0	22·7	22·4	22·1	21·8
2600	25·1	24·7	24·4	24·1	23·7	23·4	23·1	22·8	22·5
2700	25·9	25·5	25·2	24·8	24·5	24·2	23·9	23·5	23·2
2800	26·7	26·3	26·0	25·6	25·3	24·9	24·6	24·3	24 0
2900	27·4	27·0	26·6	26·3	26·0	25·6	25·3	25·0	24·7
3000	28·2	27·8	27·5	27·2	26·8	26·4	26·0	25·7	25·4

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 46′	0° 47′	0° 48′	0° 49′	0° 50′	0° 51′	0° 52′	0° 53′	0° 54′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
3100	29.0	28.6	28.2	27.8	27.5	27.1	26.8	26.4	26.1
3200	29.7	29.3	28.9	28.6	28.2	27.9	27.5	27.2	26.8
3300	30.5	30.1	29.7	29.3	28.9	28.6	28.2	27.9	27.5
3400	31.2	30.8	30.4	30.0	29.6	29.2	28.9	28.6	28.2
3500	31.9	31.5	31.1	30.7	30.3	30.0	29.6	29.3	28.9
3600	32.6	32.2	31.8	31.4	31.0	30.7	30.3	30.0	29.6
3700	33.4	33.0	32.6	32.2	31.7	31.3	31.0	30.6	30.3
3800	34.1	33.7	33.4	32.9	32.4	32.0	31.6	31.3	30.9
3900	34.8	34.4	34.0	33.6	33.1	32.7	32.3	31.9	31.6
4000	35.5	35.0	34.6	34.2	33.8	33.4	33.0	32.6	32.2
4100	36.2	35.7	35.3	34.9	34.5	34.1	33.7	33.3	32.9
4200	36.8	36.4	36.0	35.6	35.1	34.7	34.3	33.9	33.5
4300	37.5	37.1	36.7	36.2	35.8	35.4	35.0	34.6	34.2
4400	38.2	37.7	37.3	36.9	36.5	36.1	35.6	35.2	34.8
4500	38.9	38.4	38.0	37.5	37.1	36.7	36.3	35.9	35.5
4600	39.5	39.1	38.6	38.2	37.7	37.3	36.9	36.5	36.1
4700	40.2	39.7	39.3	38.9	38.4	38.0	37.6	37.1	36.7
4800	40.8	40.4	39.9	39.5	39.0	38.6	38.2	37.8	37.3
4900	41.5	41.0	40.6	40.2	39.7	39.2	38.8	38.4	38.0
5000	42.2	41.7	41.2	40.8	40.3	39.9	39.4	39.0	38.6
5100	42.8	42.3	41.8	41.4	40.9	40.5	40.0	39.6	39.2
5200	43.4	42.9	42.4	42.0	41.5	41.0	40.6	40.2	39.8
5300	44.1	43.6	43.1	42.6	42.1	41.7	41.2	40.8	40.4
5400	44.7	44.3	43.7	43.2	42.7	42.3	41.8	41.4	41.0
5500	45.3	44.8	44.3	43.8	43.3	42.9	42.4	42.0	41.6
5600	45.9	45.4	44.9	44.4	43.9	43.5	43.0	42.6	42.1
5700	46.5	46.0	45.5	45.0	44.5	44.1	43.6	43.2	42.7
5800	47.1	46.6	46.1	45.6	45.1	44.7	44.2	43.8	43.3
5900	47.7	47.2	46.7	46.2	45.7	45.3	44.8	44.4	43.9
6000	48.3	47.8	47.3	46.8	46.3	45.9	45.4	45.0	44.5

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 55′	0° 56′	0° 57′	0° 58′	0° 59′	1° 0′	1° 1′	1° 2′	1° 3′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
600	5.9	5.8	5.7	5.6	5.5	5.4	5.3	5.3	5.2
700	6.8	6.7	6.6	6.5	6.3	6.2	6.1	6.0	6.0
800	7.6	7.5	7.4	7.3	7.2	7.1	7.0	6.9	6.8
900	8.6	8.5	8.4	8.2	8.1	8.0	7.8	7.7	7.6
1000	9.5	9.3	9.1	9.0	8.8	8.7	8.6	8.5	8.4
1100	10.4	10.2	10.0	9.8	9.7	9.6	9.4	9.3	9.1
1200	11.2	11.0	10.8	10.7	10.6	10.4	10.3	10.2	10.1
1300	12.0	11.9	11.6	11.4	11.3	11.2	11.1	10.9	10.7
1400	12.8	12.6	12.5	12.3	12.2	12.0	11.8	11.6	11.4
1500	13.7	13.5	13.3	13.1	12.9	12.7	12.6	12.4	12.3
1600	14.5	14.3	14.1	13.9	13.7	13.5	13.4	13.2	13.0
1700	15.3	15.1	14.9	14.7	14.5	14.3	14.1	13.9	13.8
1800	16.1	15.9	15.7	15.5	15.3	15.1	14.8	14.6	14.5
1900	17.0	16.7	16.4	16.2	16.0	15.8	15.6	15.4	15.2
2000	17.6	17.4	17.2	17.0	16.7	16.5	16.3	16.1	15.9
2100	18.4	18.2	17.9	17.7	17.4	17.2	17.0	16.8	16.6
2200	19.2	19.0	18.7	18.5	18.2	18.0	17.8	17.6	17.3
2300	20.0	19.8	19.5	19.2	19.0	18.8	18.6	18.4	18.1
2400	20.7	20.5	20.2	20.0	19.7	19.5	19.2	19.0	18.8
2500	21.5	21.2	20.9	20.6	20.4	20.2	19.9	19.7	19.4
2600	22.2	21.9	21.7	21.4	21.2	20.9	20.7	20.4	20.2
2700	23.0	22.7	22.4	22.1	21.8	21.6	21.3	21.1	20.9
2800	23.7	23.4	23.1	22.8	22.5	22.2	21.9	21.7	21.4
2900	24.3	24.0	23.8	23.5	23.2	23.0	22.7	22.4	22.1
3000	25.1	24.8	24.5	24.2	23.9	23.6	23.3	23.1	22.8

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 55′	0° 56′	0° 57′	0° 58′	0° 59′	1° 0′	1° 1′	1° 2′	1° 3′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
3100	25·8	25·5	25·2	24·9	24·6	24·3	24·0	23·7	23·5
3200	26·5	26·2	25·9	25·5	25·2	24·9	24·7	24·4	24·1
3300	27·2	26·9	26·6	26·2	25·9	25·6	25·3	25·1	24·8
3400	27·9	27·5	27·2	26·9	26·6	26·3	26·0	25·7	25·4
3500	28·6	28·2	27·9	27·6	27·3	27·0	26·7	26·4	26·1
3600	29·3	28·9	28·5	28·2	27·9	27·6	27·3	27·0	26·7
3700	30·0	29·6	29·2	28·8	28·5	28·2	27·9	27·6	27·3
3800	30·6	30·2	29·9	29·5	29·1	28·8	28·5	28·2	27·9
3900	31·2	30·9	30·5	30·2	29·9	29·5	29·2	28·9	28·6
4000	31·9	31·5	31·2	30·8	30·5	30·1	29·8	29·5	29·2
4100	32·5	32·2	31·8	31·5	31·1	30·8	30·4	30·1	29·8
4200	33·2	32·8	32·5	32·1	31·8	31·4	31·1	30·7	30·4
4300	33·8	33·4	33·1	32·7	32·4	32·0	31·7	31·3	31·0
4400	34·4	34·0	33·7	33·3	33·0	32·6	32·3	31·9	31·6
4500	35·1	34·7	34·3	33·9	33·6	33·2	32·9	32·5	32·2
4600	35·7	35·3	34·9	34·5	34·2	33·8	33·5	33·1	32·8
4700	36·3	35·9	35·5	35·1	34·8	34·4	34·1	33·7	33·4
4800	36·9	36·5	36·1	35·7	35·4	35·0	34·7	34·3	34·0
4900	37·5	37·1	36·7	36·3	36·0	35·6	35·3	34·9	34·6
5000	38·2	37·7	37·3	36·9	36·6	36·2	35·9	35·5	35·2
5100	38·8	38·3	37·9	37·5	37·1	36·8	36·4	36·1	35·7
5200	39·4	38·9	38·5	38·1	37·7	37·3	37·0	36·6	36·3
5300	40·0	39·5	39·1	38·7	38·3	37·9	37·5	37·2	36·8
5400	40·6	40·1	39·7	39·3	38·9	38·5	38·1	37·7	37·4
5500	41·2	40·7	40·3	39·9	39·5	39·1	38·7	38·3	37·9
5600	41·7	41·3	40·9	40·5	40·1	39·7	39·3	38·9	38·5
5700	42·3	41·9	41·5	41·0	40·7	40·3	39·9	39·5	39·1
5800	42·9	42·4	42·0	41·6	41·2	40·8	40·4	40·0	39·6
5900	43·5	43·0	42·6	42·2	41·8	41·4	41·0	40·5	40·2
6000	44·1	43·6	43·2	42·7	42·3	41·9	41·5	41·1	40·7

PART II. (A.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	1° 4′	1° 5′	1° 6′	1° 7′	1° 8′	1° 10′	1° 12′	1° 14′	1° 16′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
600	5·1	5·0							
700	5·9	5·8	5·8	5·7	5·6	5·5	5·4	5·2	5·0
800	6·7	6·6	6·5	6·4	6·3	6.2	6·1	5·9	5·7
900	7·5	7·4	7·3	7·2	7·1	7·0	6·8	6·6	6·5
1000	8·3	8·2	8·1	8·0	7·9	7·7	7·6	7·4	7·2
1100	9·0	8·9	8·8	8·7	8·6	8·4	8·2	8·0	7·8
1200	9·9	9·7	9·6	9·4	9·3	9·1	8·9	8·7	8·5
1300	10·5	10·4	10·3	10·2	10·1	9·8	9·5	9·3	9·1
1400	11·3	11·2	11·0	10·8	10·7	10·5	10·3	10·0	9·7
1500	12·1	11·9	11·8	11·6	11·5	11·2	10·9	10·7	10·4
1600	12·9	12·8	12·6	12·4	12·2	11·9	11·7	11·4	11·1
1700	13·6	13·4	13·2	13·0	12·9	12·6	12·3	12·0	11·7
1800	14·3	14·1	13·9	13·7	13·6	13·2	12·9	12·6	12·3
1900	15·0	14·8	14·6	14·4	14·3	14·0	13·6	13·3	13·0
2000	15·7	15·6	15·4	15·2	15·0	14·6	14·3	14·0	13·7
2100	16·4	16·2	16·0	15·8	15·6	15·3	14·9	14·6	14·3
2200	17·1	16·8	16·6	16·5	16·3	16·0	15·6	15·2	14·9
2300	17·9	17·7	17·5	17·2	16·9	16·6	16·2	15·9	15·5
2400	18·6	18·3	18·1	17·8	17·6	17·2	16·8	16·5	16·1
2500	19·2	19·0	18·8	18·5	18·3	17·9	17·5	17·1	16·7
2600	19·9	19·7	19·4	19·2	19·0	18·5	18·1	17·7	17·3
2700	20·6	20·3	20·1	19·8	19·6	19·2	18·8	18·4	18·0
2800	21·2	20·9	20·7	20·5	20·3	19·8	19·4	19·0	18·6
2900	21·9	21·7	21·4	21·1	20·9	20·4	19·9	19·5	19·1
3000	22·5	22·2	22·0	21·8	21·6	21·0	20·5	20·1	19·7

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	1° 4′	1° 5′	1° 6′	1° 7′	1° 8′	1° 10′	1° 12′	1° 14′	1° 16′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
3100	23·2	22·9	22·7	22·4	22·2	21·7	21·2	20·7	20·3
3200	23·8	23·6	23·3	23·1	22·8	22·3	21·8	21·3	20·9
3300	24·5	24·2	23·9	23·7	23·4	22·9	22·4	21·9	21·5
3400	25·1	24·8	24·5	24·2	24·0	23·5	23·0	22·5	22·0
3500	25·8	25·5	25·2	24·9	24·6	24·1	23·6	23·1	22·6
3600	26·4	26·1	25·8	25·5	25·2	24·7	24·2	23·7	23·3
3700	27·0	26·7	26·4	26·1	25·8	25·3	24·8	24·3	23·8
3800	27·6	27·3	27·0	26·7	26·4	25·9	25·3	24·8	24·4
3900	28·2	27·9	27·6	27·3	27·0	26·5	25·9	25·4	24·9
4000	28·8	28·5	28·2	27·9	27·6	27·1	26·5	26·0	25·5
4100	29·4	29·1	28·8	28·5	28·2	27·7	27·1	26·6	26·1
4200	30·0	29·7	29·4	29·1	28·8	28·2	27·7	27·1	26·6
4300	30·6	30·3	30·0	29·7	29·4	28·8	28·2	27·7	27·1
4400	31·2	30·9	30·6	30·3	30·0	29·4	28·8	28·2	27·7
4500	31·8	31·5	31·2	30·9	30·6	30·0	29·4	28·8	28·2
4600	32·4	32·1	31·7	31·4	31·1	30·5	29·9	29·3	28·8
4700	33·0	32·7	32·3	32·0	31·7	31·1	30·5	29·9	29·3
4800	33·6	33·3	32·9	32·6	32·2	31·6	31·0	30·4	29·9
4900	34·2	33·8	33·5	33·2	32·8	32·2	31·6	31·0	30·4
5000	34·8	34·4	34·0	33·7	33·4	32·7	32·1	31·5	30·9
5100	35·4	35·0	34·6	34·3	34·0	33·3	32·7	32·1	31·5
5200	35·9	35·6	35·2	34·9	34·5	33·8	33·2	32·6	32·0
5300	36·5	36·1	35·8	35·4	35·1	34·4	33·7	33·1	32·5
5400	37·0	36·7	36·3	36·0	35·6	34·9	34·2	33·6	33·0
5500	37·6	37·2	36·9	36·5	36·2	35·5	34·8	34·1	33·5
5600	38·1	37·8	37·4	37·1	36·7	36·0	35·3	34·6	34·0
5700	38·7	38·3	37·9	37·6	37·2	36·5	35·8	35·2	34·5
5800	39·2	38·9	38·5	38·1	37·7	37·0	36·3	35·7	35·0
5900	39·8	39·4	39·1	38·7	38·3	37·6	36·9	36·2	35·5
6000	40·3	40·0	39·6	39·2	38·8	38·1	37·4	36·7	36·0

PART II. (A.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	1° 18′	1° 20′	1° 22′	1° 24′	1° 26′	1° 28′	1° 30′	1° 32′	1° 34′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
800	5·6	5·4	5·3	5·1	5·0				
900	6·3	6·1	6·0	5·8	5·6	5·5	5·5	5·4	5·3
1000	7·0	6·8	6·6	6·4	6·2	6·1	6·1	6·0	5·9
1100	7·6	7·4	7·2	7·0	6·8	6·7	6·6	6·5	6·4
1200	8·3	8·1	7·9	7·6	7·4	7·3	7·2	7·1	7·0
1300	8·9	8·7	8·5	8·2	8·0	7·9	7·8	7·7	7·5
1400	9·5	9·3	9·1	8·8	8·6	8·5	8·4	8·2	8·0
1500	10·2	10·0	9·8	9·5	9·3	9·1	9·0	8·8	8·6
1600	10·9	10·6	10·4	10·1	9·9	9·7	9·5	9·3	9·1
1700	11·5	11·2	10·9	10·6	10·4	10·2	10·1	9·9	9·7
1800	12·1	11·8	11·5	11·2	11·0	10·8	10·7	10·5	10·3
1900	12·7	12·4	12·1	11·9	11·6	11·4	11·2	11·0	10·8
2000	13·4	13·1	12·8	12·5	12·3	12·0	11·8	11·6	11·4
2100	14·0	13·7	13·4	13·1	12·9	12·6	12·3	12·1	11·9
2200	14·6	14·3	14·0	13·7	13·4	13·2	12·9	12·6	12·4
2300	15·2	14·9	14·6	14·3	14·0	13·7	13·5	13·2	12·9
2400	15·8	15·5	15·2	14·9	14·6	14·3	14·0	13·7	13·5
2500	16·4	16·0	15·7	15·4	15·1	14·8	14·5	14·2	14·0
2600	17·0	16·7	16·3	16·0	15·7	15·4	15·1	14·8	14·5
2700	17·6	17·2	16·9	16·5	16·2	15·9	15·6	15·5	15·0
2800	18·2	17·8	17·5	17·1	16·8	16·5	16·2	15·3	15·6
2900	18·7	18·4	18·0	17·7	17·3	17·0	16·7	16·4	16·1
3000	19·3	18·9	18·6	18·2	17·9	17·5	17·2	16·9	16·6

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	1° 18′	1° 20′	1° 22′	1° 24′	1° 26′	1° 28′	1° 30′	1° 32′	1° 34′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
3100	19·9	19·5	19·1	18·8	18·4	18·0	17·7	17·4	17·1
3200	20·5	20·1	19·7	19·3	18·9	18·6	18·2	17·9	17·6
3300	21·1	20·7	20·3	19·9	19·5	19·1	18·8	18·4	18·1
3400	21·6	21·2	20·8	20·4	20·0	19·6	19·3	18·9	18·6
3500	22·2	21·8	21·3	20·9	20·5	20·1	19·8	19·4	19·1
3600	22·8	22·3	21·9	21·4	21·1	20·6	20·3	19·9	19·6
3700	23·4	22·9	22·4	22·0	21·5	21·2	20·8	20·4	20·1
3800	23·9	23·4	23·0	22·5	22 1	21·7	21·3	20·9	20·6
3900	24·5	24·0	23·5	23·1	22·7	22·3	21·9	21·5	21·1
4000	25·0	24·5	24·0	23·6	23·2	22·8	22·4	22·0	21·6
4100	25·6	25·1	24·6	24·1	23·7	23·3	22·9	22·5	22·1
4200	26·1	25·6	25·1	24·6	24·2	23·8	23·4	22·9	22·5
4300	26·6	26·1	25·7	25·2	24·7	24·3	23·9	23·4	23·0
4400	27·1	26·6	26·2	25·7	25·2	24·7	24·3	23·9	23·5
4500	27·7	27·2	26·7	26·2	25·7	25·2	24·8	24·4	24·0
4600	28·2	27·7	27·2	26·7	26·2	25·7	25·3	24·9	24·4
4700	28·8	28·2	27·7	27·2	26·7	26·2	25·8	25·4	25·0
4800	29·3	28·8	28·2	27·7	27·2	26·7	26·3	25·9	25·5
4900	29·9	29·3	28·8	28·2	27·7	27·2	26·8	26·4	26·0
5000	30·4	29·8	29·3	28·7	28·2	27·7	27·3	26·9	26·4
5100	30·9	30·3	29·8	29·2	28·7	28·2	27·7	27·3	26·9
5200	31·4	30·8	30·3	29·7	29·2	28·7	28·2	27·7	27·3
5300	31·9	31·3	30·8	30·2	29·7	29·2	28·7	28·2	27·7
5400	32·4	31·8	31·3	30·7	30·2	29·7	29·2	28·7	28·2
5500	32·9	32·3	31·8	31·2	30·7	30·2	29·7	29·2	28·7
5600	33·4	32·8	32·3	31·7	31·2	30·7	30·1	29·6	29·1
5700	33·9	33·3	32·8	32·2	31·6	31·1	30·6	30·1	29·6
5800	34·4	33·8	33·2	32·7	32·1	31·5	31·0	30·6	30·1
5900	34·9	34·3	33·7	33·1	32·6	32·0	31·5	31·0	30·6
6000	35·4	34·8	34·2	33·6	33·1	32·5	32·0	31·5	31·0

PART II. (A.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	1° 36′	1° 38′	1° 40′	1° 42′	1° 44′	1° 46′	1° 48′	1° 50′	1° 52′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
900	5 2	5·1	5·0						
1000	5.7	5·6	5·5	5·4	5·3	5·2	5·1	5·0	
1100	6·3	6·2	6·1	6·0	5·9	5·8	5·7	5·5	5·4
1200	6·9	6·7	6·6	6·5	6·3	6·2	6·1	6·0	5·9
1300	7·4	7·3	7·1	7·0	6·9	6·7	6·6	6·5	6·4
1400	7·9	7·7	7·6	7·4	7·3	7·2	7·1	7·0	6·8
1500	8·4	8·3	8·1	8·0	7·8	7·7	7·6	7·5	7·3
1600	9·0	8·8	8·6	8·5	8·3	8·2	8·1	7·9	7·8
1700	9·5	9·3	9·1	9·0	8·9	8·7	8·5	8·4	8·3
1800	10·1	9·9	9·7	9·5	9·4	9·2	9·0	8·9	8·7
1900	10·6	10·4	10·2	10·0	9·9	9·7	9·6	9·4	9·2
2000	11·1	10 9	10·7	10·5	10·4	10·2	10·0	9·8	9·7
2100	11·7	11·5	11·2	11·0	10·8	10·7	10·5	10·3	10·1
2200	12·2	12·0	11·7	11·5	11·3	11·1	11·0	10·8	10·6
2300	12·7	12·5	12·2	12·0	11·8	11·6	11·4	11·3	11·1
2400	13·2	13·0	12·7	12·5	12·3	12·1	11·9	11·7	11·5
2500	13·7	13·5	13·2	13·0	12·8	12·6	12·4	12·2	12·0
2600	14·2	14·0	13·8	13·5	13·3	13·1	12·8	12·6	12·4
2700	14·7	14·5	14·2	14·0	13·8	13·6	13·4	13·1	12·9
2800	15·3	15·0	14·7	14·5	14·2	14·0	13·8	13·6	13·3
2900	15·8	15·5	15·2	14·9	14·7	14·5	14·3	14·1	13·8
3000	16·3	16·0	15·7	15·4	15·1	14·9	14·7	14·5	14·3

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	1° 36′	1° 38′	1° 40′	1° 42′	1° 44′	1° 46′	1° 48′	1° 50′	1° 52′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
3100	16·8	16·5	16·2	15·9	15·6	15·4	15·1	14·9	14·7
3200	17·3	17·0	16·7	16·4	16·1	15·8	15·6	15·4	15·1
3300	17·8	17·5	17·2	16·9	16·6	16·3	16·1	15·9	15·6
3400	18·3	18·0	17·7	17·4	17·1	16·8	16·5	16·3	16·0
3500	18·8	18·5	18·2	17·9	17·6	17·3	17·0	16·8	16·5
3600	19·2	18·9	18·6	18·3	18·0	17·7	17·4	17·2	16·9
3700	19·7	19·4	19·1	18·8	18·5	18·2	17·9	17·6	17·4
3800	20·2	19·9	19·5	19·2	18·9	18·6	18·3	18·0	17·7
3900	20·7	20·4	20·0	19·7	19·4	19·1	18·8	18·5	18·2
4000	21·2	20·8	20·5	20·2	19·8	19·5	19·2	18·9	18·6
4100	21·7	21·3	21·0	20·7	20·3	20·0	19·7	19·4	19·1
4200	22·2	21·8	21·4	21·1	20·8	20·4	20·1	19·8	19·5
4300	22·6	22·3	21·9	21·5	21·2	20·9	20·6	20·3	20·0
4400	23·1	22·7	22·4	22·0	21·6	21·3	21·0	20·7	20·4
4500	23·6	23·2	22·8	22·5	22·1	21·7	21·4	21·1	20·8
4600	24·1	23·7	23·3	22·9	22·5	22·2	21·8	21·5	21·2
4700	24·5	24·2	23·8	23·4	23·0	22·6	22·3	22·0	21·6
4800	25·0	24·6	24·2	23·8	23·4	23·1	22·7	22·4	22·1
4900	25·5	25·1	24·7	24·3	23·8	23·4	23·1	22·8	22·5
5000	26·0	25·5	25·1	24·7	24·3	23·9	23·5	23·2	22·9
5100	26·4	26·0	25·6	25·2	24·8	24·4	24·0	23·7	23·3
5200	26·9	26·4	26·0	25·6	25·2	24·8	24·4	24·1	23·7
5300	27·3	26·9	26·5	26·1	25·7	25·3	24·9	24·5	24·1
5400	27·7	27·3	26·9	26·5	26·1	25·7	25·3	24·9	24·5
5500	28·2	27·8	27·3	26·9	26·5	26·1	25·7	25·3	24·9
5600	28·7	28·2	27·8	27·3	26·9	26·5	26·1	25·7	25·4
5700	29·1	28·7	28·2	27·8	27·4	27·0	26·6	26·2	25·8
5800	29·6	29·1	28·6	28·2	27·8	27·4	27·0	26·6	26·2
5900	30·1	29·6	29·1	28·6	28·2	27·8	27·4	27·0	26·6
6000	30·5	30·0	29·5	29·0	28·6	28·2	27·8	27·4	27·0

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	1° 54′	1° 56′	1° 58′	2° 0′	2° 2′	2° 4′	2° 6′	2° 8′	2° 10′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
1100	5·3	5·2	5·2	5·1	5·0				
1200	5·8	5·7	5·6	5·5	5·4	5·3	5·3	5·2	5·1
1300	6·3	6·2	6·1	6·0	5·9	5·8	5·7	5·6	5·5
1400	6·7	6·6	6·5	6·4	6·3	6·2	6·1	6·0	5·9
1500	7·2	7·1	7·0	6·9	6·8	6·7	6·6	6·5	6·4
1600	7·7	7·5	7·4	7·3	7·2	7·1	7·0	6·9	6·8
1700	8·1	8·0	7·9	7·8	7·7	7·6	7·4	7·3	7·2
1800	8·6	8·4	8·3	8·2	8·1	8·0	7·9	7·7	7·6
1900	9·0	8·9	8·8	8.6	8·5	8·4	8·3	8·1	8·0
2000	9·5	9·3	9·2	9·1	8·9	8·8	8·7	8·6	8·4
2100	10·0	9·8	9·6	9·5	9·4	9·2	9·1	9·0	8·9
2200	10·4	10·3	10·1	9·9	9·8	9·6	9·5	9·4	9·3
2300	10·9	10·7	10·6	10·4	10·2	10·1	9·9	9·8	9·6
2400	11·3	11·1	11·0	10·8	10·6	10·4	10·3	10·1	10·0
2500	11·8	11·6	11·4	11·2	11·0	10·9	10·7	10·6	10·4
2600	12·2	12·0	11·8	11·7	11·5	11·3	11·2	11·0	10·9
2700	12·7	12·4	12·2	12·0	11·9	11·7	11·6	11·4	11·3
2800	13·1	12·9	12·7	12·5	12·3	12·1	12·0	11·9	11·7
2900	*13·6*	13·4	13·2	12·9	12·7	12·6	12·4	12·2	12·1
3000	*14·0*	13·8	13·6	13·4	13·2	13·0	12·8	12·6	12·4

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	1° 54′	1° 56′	1° 58′	2° 0′	2° 2′	2° 4′	2° 6′	2° 8′	2° 10′
	m.	m.	m	m.	m.	m.	m.	m.	m.
3100	14·5	14·2	14·0	13·8	13·6	13·4	13·2	13·0	12·8
3200	14·9	14·7	14·4	14·2	14·0	13·8	13·6	13·4	13·2
3300	15·3	15·1	14·9	14·6	14·4	14·2	14·0	13·8	13·6
3400	15·8	15·5	15·3	15·1	14·8	14·6	14·4	14·2	14·0
3500	16·2	16·0	15·7	15·5	15·3	15·0	14·8	14·6	14·4
3600	16·6	16·4	16·1	15·9	15·9	15·4	15·2	15·0	14·8
3700	17·1	16·8	16·6	16·3	16·1	15·8	15·6	15·4	15·2
3800	17·5	17·2	17·0	16·7	16·5	16·2	16·0	15·8	15·6
3900	17·9	17·6	17·4	17·1	16·9	16·6	16·4	16·2	16·0
4000	18·3	18·0	17·8	17·5	17·3	17·0	16·8	16·5	16·3
4100	18·8	18·5	18·2	17·9	17·7	17·4	17·2	16·9	16·7
4200	19·2	18·9	18·6	18·3	18·1	17·8	17·6	17·3	17·1
4300	19·7	19·4	19·1	18·8	18·5	18·2	18·0	17·7	17·5
4400	20·1	19·8	19·5	19·2	18·9	18·6	18·4	18·1	17·9
4500	20·5	20·2	19·9	19·6	19·3	19·0	18·8	18·5	18·3
4600	20·9	20·6	20·3	20·0	19·7	19·4	19·2	18·9	18·7
4700	21·3	21·0	20·7	20·4	20·1	19·8	19·6	19·3	19·1
4800	21·7	21·4	21·1	20·8	20·5	20·2	19·9	19·7	19·4
4900	22·2	21·8	21·5	21·2	20·9	20·6	20·3	20·0	19·8
5000	22·6	22·2	21·9	21·6	21·3	21·0	20·7	20·4	20·2
5100	23·0	22·6	22·3	22·0	21·7	21·4	21·1	20·8	20·6
5200	23·4	23·0	22·7	22·4	22·1	21·8	21·5	21·2	20·9
5300	23·8	23·4	23·1	22·8	22·5	22·2	21·9	21·6	21·3
5400	24·2	23·8	23·5	23·2	22·9	22·6	22·3	22·0	21·7
5500	24·6	24·2	23·9	23·6	23·3	23·0	22·7	22·4	22·1
5600	25·0	24·6	24·3	24·0	23·6	23·3	23·0	22·7	22·4
5700	25·4	25·0	24·7	24·3	24·0	23·7	23·4	23·1	22·8
5800	25·8	25·4	25·1	24·7	24·4	24·1	23·8	23·4	23·1
5900	26·2	25·8	25·5	25·1	24·8	24·5	24·2	23·8	23·5
6000	26·6	26·2	25·9	25·5	25·2	24·8	24·5	24·2	23·9

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	2° 12′	2° 14′	2° 16′	2° 18′	2° 20′	2° 22′	2° 24′	2° 26′	2° 28′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
1200	5·0	5·0							
1300	5·4	5·4	5·3	5·2	5·1	5·1	5·0	5·0	
1400	5·8	5·8	5·7	5·6	5·5	5·5	5·4	5·3	5·2
1500	6·3	6·2	6·1	6·0	5·9	5·8	5·7	5·7	5·6
1600	6·7	6·6	6·5	6·4	6·3	6·2	6·1	6·1	6·0
1700	7·1	7·0	6·9	6·8	6·7	6·6	6·5	6·4	6·3
1800	7·5	7·4	7·3	7·2	7·1	7·0	6·9	6·8	6·7
1900	7·9	7·8	7·7	7·6	7·5	7·4	7·3	7·2	7·1
2000	8·3	8·2	8·1	8·0	7·9	7·8	7·7	7·6	7·5
2100	8·7	8·6	8·4	8·3	8·2	8·1	8·0	7·9	7·8
2200	9·1	9·0	8·8	8·7	8·6	8·5	8·4	8·3	8·2
2300	9·5	9·4	9·2	9·1	8·9	8·8	8·7	8·6	8·5
2400	9·8	9·7	9·6	9·5	9·3	9·2	9·1	9·0	8·9
2500	10·3	10·1	10·0	9·9	9·7	9·6	9·5	9·4	9·3
2600	10·7	10·6	10·4	10·3	10·1	10·0	9·9	9·8	9·7
2700	11·1	11·0	10·8	10·6	10·5	10·4	10·2	10·1	10·0
2800	11·5	11·3	11·2	11·0	10·9	10·8	10·6	10·5	10·3
2900	*11·9*	11·7	11·5	11·4	11·2	11·1	11·0	10·8	10·6
3000	*12·3*	12·1	11·9	11·8	11·6	11·5	11·3	11·2	11·0

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	2° 12′	2° 14′	2° 16′	2° 18′	2° 20′	2° 22′	2° 24′	2° 26′	2° 28′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
3100	12·7	12·5	12·3	12·2	12·0	11·9	11·7	11·6	11·4
3200	13·0	12·9	12·7	12·5	12·4	12·2	12·1	11·9	11·8
3300	13·4	13·3	13·1	12·9	12·8	12·6	12·4	12·3	12·1
3400	13·8	13·6	13·5	13·3	13·2	13·1	12·8	12·6	12·5
3500	14·2	14·0	13·8	13·7	13·5	13·4	13·2	13·0	12·8
3600	14·6	14·4	14·2	14·0	13·9	13·7	13·5	13·3	13·2
3700	15·0	14·8	14·6	14·4	14·2	14·1	13 9	13·7	13·5
3800	15·4	15·2	15·0	14·8	14·6	14·4	14·2	14·0	13·8
3900	15·8	15·6	15·4	15·2	15·0	14·8	14·6	14·4	14·2
4000	16·1	15·9	15·7	15·5	15·3	15·1	14·9	14·7	14·6
4100	16·5	16·3	16·1	15·9	15·7	15·5	15·3	15·1	14·9
4200	16·9	16·7	16·5	16·3	16·0	15·8	15·6	15·4	15·3
4300	17·3	17·1	16·9	16·7	16·4	16·2	16·0	15·8	15·6
4400	17·6	17·4	17·2	17·0	16·8	16·5	16·3	16·1	16·0
4500	18·0	17·8	17·6	17·4	17·1	16·9	16·7	16·5	16·3
4600	18·4	18·2	17·9	17·7	17·5	17·2	17·0	16·8	16·6
4700	18·8	18·6	18·3	18·1	17·8	17·6	17·4	17·2	17·0
4800	19·2	18·9	18·7	18·4	18·2	18·0	17·7	17·5	17·3
4900	19·5	19·3	19·0	18·8	18·6	18·4	18·1	17·9	17·7
5000	19·9	19·6	19·4	19·2	18·9	18·7	18·5	18·2	18·0
5100	20·3	20·0	19·7	19·5	19·3	19·1	18·8	18·6	18·3
5200	20·7	20·4	20·1	19·8	19·6	19·4	19·2	18·9	18·7
5300	21·0	20·8	20·5	20·2	20·0	19·8	19·5	19·3	19·0
5400	21·4	21·1	20·9	20·6	20·3	20·1	19·9	19·6	19·4
5500	21·8	21·5	21·2	21·0	20·7	20·4	20·2	20·0	19·7
5600	22·1	21·8	21·6	21·3	21·0	20·8	20·5	20·3	20·1
5700	22·5	22·2	21·9	21·7	21·4	21·1	20·8	20·6	20·4
5800	22·9	22·6	22·3	22·0	21·7	21·4	21·2	20·9	20·7
5900	23·2	23·0	22·7	22·4	22·1	21·8	21·5	21·3	21·0
6000	23·6	23·3	23·0	22·7	22·4	22·1	21·8	21·6	21·4

PART II. (A.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	2° 30′	2° 32′	2° 34′	2° 36′	2° 38′	2° 40′	2° 42′	2° 44′	2° 46′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
1400	5·2	5·1	5·1	5·0					
1500	5·5	5·5	5·4	5·3	5·2	5·2	5·1	5·0	5·0
1600	5·9	5·8	5·8	5·7	5·6	5·5	5·5	5·4	5·4
1700	6·3	6·2	6·1	6·0	5·9	5·9	5·8	5·7	5·6
1800	6·7	6·6	6·4	6·4	6·3	6·2	6·2	6·1	6·0
1900	7·0	6·9	6·8	6·7	6·6	6·5	6·4	6·4	6·3
2000	7·4	7·3	7·2	7·1	7·0	6·9	6·8	6·7	6·7
2100	7·7	7·6	7·5	7·4	7·3	7·2	7·1	7·0	7·0
2200	8·1	8·0	7·9	7·8	7·7	7·6	7·5	7·4	7·3
2300	8·4	8·3	8·2	8·1	8·0	7·9	7·8	7·7	7·6
2400	8·8	8·7	8 6	8·5	8·4	8·3	8·2	8·1	8·0
2500	9·1	9·0	8·9	8·8	8·7	8·6	8·5	8·4	8·3
2600	9·5	9·3	9·2	9·1	9·0	8·9	8·8	8·7	8·6
2700	9·8	9·7	9·5	9·4	9·3	9·2	9·1	9·0	8·9
2800	10·2	10·0	9·9	9·8	9·7	9·6	9·5	9·4	9·3
2900	10·4	10·3	10·2	10·1	10·0	9·9	9·8	9·7	9·6
3000	10·9	10·7	10·6	10·5	10·4	10·3	10·2	10·0	9·9

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	2° 30′	2° 32′	2° 34′	2° 36′	2° 38′	2° 40′	2° 42′	2° 44′	2° 46′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
3100	11·3	11·1	11·0	10·9	10·8	10·6	10·5	10·4	10·3
3200	11·6	11·5	11·3	11·2	11·1	11·0	10·8	10·7	10·6
3300	12·0	11·8	11·7	11·5	11·4	11·3	11·2	11·0	10·9
3400	12·3	12·2	12·0	11·9	11·7	11·6	11·5	11·3	11·2
3500	12·7	12·5	12·4	12·2	12·1	11·9	11·8	11·6	11·5
3600	13·0	12·9	12·7	12·6	12·4	12·3	12·1	12·0	11·8
3700	13·4	13·2	13·1	12·9	12·8	12·6	12·5	12·3	12·2
3800	13·7	13·6	13·4	13·3	13·1	12·9	12·8	12·6	12·5
3900	14·1	13·9	13·7	13·6	13·5	13·3	13·1	13·0	12·8
4000	14·4	14·2	14·0	13·9	13·7	13·6	13·4	13·2	13·1
4100	14·8	14·6	14·4	14·2	14·1	13·9	13·7	13·6	13·4
4200	15·1	14·9	14·7	14·6	14·4	14·2	14·0	13·9	13·7
4300	15·5	15·3	15·1	14·9	14·7	14·6	14·4	14·2	14·1
4400	15·8	15·6	15·4	15·2	15·0	14·9	14·7	14·5	14·4
4500	16·1	15·9	15·7	15·6	15·4	15·2	15·0	14·8	14·7
4600	16·4	16·2	16·0	15·9	15·7	15·5	15·3	15·1	15·0
4700	16·8	16·6	16·4	16·2	16·0	15·9	15·7	15·5	15·3
4800	17·1	16·9	16·7	16·5	16·3	16·1	16·0	15·8	15·6
4900	17·5	17·3	17·1	16·9	16·7	16·5	16·3	16·1	15·9
5000	17·8	17·6	17·4	17·2	17·0	16·8	16·6	16·4	16·2
5100	18·1	17·9	17·7	17·5	17·3	17·1	16·9	16·7	16·5
5200	18·4	18·2	18·0	17·8	17·6	17·4	17·2	17·0	16·8
5300	18·8	18·6	18·4	18·2	18·0	17·8	17·6	17·4	17·2
5400	19·1	18·9	18·7	18·5	18·3	18·1	17·9	17·7	17·5
5500	19·5	19·2	19·0	18·8	18·6	18·4	18·2	18·0	17·8
5600	19·8	19·6	19·3	19·1	18·9	18·7	18·5	18·3	18·1
5700	20·2	19·9	19·7	19·4	19·2	19·0	18·8	18·6	18·4
5800	20·5	20·2	20·0	19·8	19·5	19·3	19·1	18·9	18·7
5900	20·8	20·5	20·3	20·1	19·9	19·6	19·4	19·2	19·0
6000	21·1	20·9	20·6	20·4	20·2	20·0	19·7	19·5	19·3

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	2° 48′	2° 50′	2° 52′	2° 54′	2° 56′	2° 58′	3° 0′	3° 2′	3° 4′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
1600	5·3	5·2	5·1	5·1	5·0	5·0			
1700	5·6	5·5	5·4	5·3	5·3	5·2	5·2	5·1	5·1
1800	6·0	5·9	5·8	5·8	5·7	5·6	5·5	5·5	5·4
1900	6·3	6·2	6·1	6·0	6·0	5·9	5·8	5·7	5·7
2000	6·6	6·5	6·4	6·4	6·3	6·2	6·1	6·1	6·0
2100	6·9	6·8	6·7	6·7	6·6	6·5	6·4	6·4	6·3
2200	7·2	7·2	7·1	7·0	6·9	6·9	6·8	6·7	6·6
2300	7·5	7·5	7·4	7·3	7·2	7·1	7·0	7·0	6·9
2400	7·9	7·8	7·7	7·6	7·5	7·5	7·3	7·3	7·2
2500	8·2	8·1	8·0	7·9	7·8	7·7	7·7	7·6	7·5
2600	8·5	8·4	8·3	8·2	8·1	8·1	8·0	7·9	7·8
2700	8·8	8·7	8·6	8·5	8·4	8·4	8·3	8·2	8·1
2800	9·2	9·1	9·0	8·9	8·8	8·7	8·6	8·5	8·4
2900	9·5	9·4	9·3	9·2	9·1	9·0	8·9	8·8	8·7
3000	9·8	9·7	9·6	9·5	9·4	9·3	9·2	9·1	9·0

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	2° 48′	2° 50′	2° 52′	2° 54′	2° 56′	2° 58′	3° 0′	3° 2′	3° 4′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
3100	10·1	10·0	9·9	9·8	9·7	9·6	9·5	9·4	9·3
3200	10·5	10·3	10·2	10·1	10·0	9·9	9·8	9·7	9·6
3300	10·8	10·6	10·5	10·4	10·3	10·2	10·1	10·0	9·9
3400	11·1	10·9	10·8	10·7	10·6	10·5	10·4	10·3	10·2
3500	11·4	11·3	11·1	11·0	10·9	10·8	10·7	10·6	10·5
3600	11·7	11·6	11·4	11·3	11·2	11·1	11·0	10·9	10·8
3700	12·0	11·9	11·7	11·6	11·5	11·4	11·3	11·2	11·1
3800	12·4	12·2	12·0	11·9	11·8	11·7	11·5	11·4	11·3
3900	12·7	12·5	12·4	12·2	12·1	12·0	11·8	11·7	11·6
4000	13·0	12·8	12·6	12·5	12·4	12·3	12·1	12·0	11·9
4100	13·3	13·1	12·9	12·8	12·7	12·6	12·4	12·3	12·2
4200	13·6	13·4	13·3	13·1	13·0	12·9	12·7	12·6	12·5
4300	13·9	13·7	13·5	13·4	13·3	13·2	13·0	12·9	12·8
4400	14·2	14·0	13·8	13·7	13·6	13·5	13·4	13·2	13·1
4500	14·6	14·4	14·2	14·0	13·9	13·8	13·6	13·5	13·3
4600	14·9	14·7	14·6	14·4	14·2	14·1	14·0	13·8	13·6
4700	15·2	15·0	14·8	14·7	14·5	14·4	14·2	14·1	13·9
4800	15·4	15·3	15·1	14·9	14·8	14·6	14·5	14·3	14·2
4900	15·7	15·6	15·4	15·3	15·1	14·9	14·7	14·6	14·4
5000	16·0	15·9	15·8	15·6	15·4	15·2	15·0	14·9	14·7
5100	16·3	16·2	16·0	15·9	15·7	15·5	15·3	15·2	15·0
5200	16·6	16·5	16·3	16·1	16·0	15·8	15·6	15·5	15·3
5300	16·9	16·8	16·6	16·4	16·3	16·1	15·9	15·8	15·6
5400	17·3	17·1	16·9	16·7	16·5	16·4	16·2	16·1	15·9
5500	17·6	17·4	17·2	17·0	16·8	16·7	16·5	16·4	16·2
5600	17·9	17·7	17·5	17·3	17·1	17·0	16·8	16·6	16·5
5700	18·2	18·0	17·8	17·6	17·4	17·2	17·1	16·9	16·8
5800	18·5	18·3	18·1	17·9	17·7	17·5	17·3	17·2	17·0
5900	18·8	18·6	18·4	18·2	18·0	17·8	17·6	17·4	17·3
6000	19·1	18·9	18·7	18·5	18·3	18·1	17·9	17·7	17·6

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	3° 6′	3° 8′	3° 10′	3° 15′	3° 20′	3° 25′	3° 30′	3° 35′	3° 40′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
1700	5·0	5·0	5·0						
1800	5·4	5·3	5·3	5·1	5·0				
1900	5·6	5·6	5·6	5·4	5·3	5·1	5·0		
2000	6·0	5·9	5·9	5·7	5·6	5·4	5·3	5·2	5·1
2100	6·3	6·2	6·1	6·0	5·8	5·7	5·5	5·4	5·3
2200	6·6	6·5	6·4	6·2	6·1	5·9	5·8	5·7	5·6
2300	6·9	6·8	6·7	6·5	6·4	6·2	6·1	5·9	5·8
2400	7·2	7·1	7·0	6·8	6·7	6·5	6·4	6·2	6·1
2500	7·4	7·4	7·3	7·1	6·9	6·8	6·6	6·5	6·3
2600	7·7	7·7	7·6	7·4	7·2	7·0	6·9	6·7	6·6
2700	8·0	7·9	7·9	7·7	7·5	7·3	7·1	7·0	6·8
2800	8·3	8·2	8·2	8·0	7·8	7·6	7·4	7·2	7·1
2900	8·6	8·5	8·4	8·2	8·0	7·8	7·7	7·5	7·3
3000	8·9	8·8	8·7	8·5	8·3	8·1	7·9	7·8	7·6

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	3° 6′	3° 8′	3° 10′	3° 15′	3° 20′	3° 25′	3° 30′	3° 35′	3° 40′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
3100	9·2	9·1	9·0	8·7	8·5	8·3	8·2	8·0	7·9
3200	9·5	9·4	9·3	9·0	8·8	8·6	8·4	8·2	8·1
3300	9·8	9·7	9·6	9·3	9·1	8·9	8·7	8·5	8·3
3400	10·1	10·0	9·9	9·6	9·4	9·1	8·9	8·7	8·5
3500	10·4	10·3	10·2	9·9	9·7	9·4	9·2	9·0	8·8
3600	10·7	10·5	10·4	10·2	9·9	9·7	9·5	9·3	9·1
3700	11·0	10·8	10·7	10·4	10·2	10·0	9·7	9·5	9·3
3800	11·2	11·1	11·0	10·7	10·5	10·2	10·0	9·7	9·5
3900	11·5	11·4	11·3	11·0	10·8	10·5	10·2	10·0	9·7
4000	11·8	11·7	11·5	11·3	11·0	10·8	10·5	10·2	10·0
4100	12·1	12·0	11·8	11·5	11·3	11·0	10·8	10·5	10·2
4200	12·4	12·3	12·1	11·8	11·5	11·3	11·0	10·8	10·5
4300	12·7	12·6	12·4	12·1	11·8	11·5	11·3	11·0	10·8
4400	12·9	12·8	12·7	12·4	12·1	11·8	11·5	11·2	11·0
4500	13·2	13·1	13·0	12·7	12·4	12·1	11·8	11·5	11·2
4600	13·5	13·3	13·2	12·9	12·6	12·3	12·0	11·8	11·5
4700	13·8	13·7	13·5	13·2	12·9	12·6	12·3	12·0	11·8
4800	14·0	13·9	13·8	13·4	13·1	12·8	12·5	12·3	12·0
4900	14·3	14·2	14·1	13·7	13·4	13·1	12·8	12·5	12·3
5000	14·6	14·4	14·3	14·0	13·6	13·3	13·0	12·7	12·5
5100	14·9	14·7	14·6	14·2	13·9	13·6	13·3	13·0	12·7
5200	15·2	15·0	14·8	14·5	14·2	13·9	13·6	13·3	13·0
5300	15·5	15·3	15·1	14·8	14·5	14·1	13·8	13·5	13·2
5400	15·8	15·6	15·4	15·0	14·7	14·4	14·0	13·7	13·4
5500	16·1	15·9	15·7	15·3	15·0	14·6	14·3	14·0	13·7
5600	16·3	16·2	16·0	15·6	15·2	14·9	14·6	14·3	14·0
5700	16·6	16·4	16·3	15·9	15·5	15·2	14·8	14·5	14·2
5800	16·9	16·7	16·5	16·2	15·8	15·4	15·1	14·7	14·4
5900	17·1	17·0	16·8	16·4	16·1	15·7	15·3	15·0	14·7
6000	*17·4*	*17·2*	17·1	16·7	16·3	16·0	15·6	15·2	14·9

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	3° 45′	**3° 50′**	**3° 55′**	**4° 0′**	**4° 5′**	**4° 10′**	**4° 15′**	**4° 20′**	**4° 25′**
	m.	**m.**	**m.**	**m.**	**m.**	**m.**	**m.**	**m.**	**m.**
2200	5·5								
2300	5·7	5·6	5·5						
2400	5·9	5·8	5·7	5·6	5·5				
2500	6·2	6·0	5·9	5·8	5·7	5·6	5·5		
2600	6·4	6·3	6·1	6·0	5·9	5·8	5·7	5·6	5·5
2700	6·7	6·5	6·4	6·2	6·1	6·0	5·9	5·8	5·7
2800	6·9	6·8	6·6	6·5	6·4	6·2	6·1	6·0	5·9
2900	*7·2*	7·0	6·9	6·7	6·6	6·5	6·3	6·2	6·1
3000	*7·4*	7·3	7·1	7·0	6·8	6·7	6·6	6·4	6·3

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	3° 45′	3° 50′	3° 55′	4° 0′	4° 5′	4° 10′	4° 15′	4° 20′	4° 25′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
3100	7·7	7·5	7·3	7·2	7·0	6·9	6·8	6·7	6·5
3200	7·9	7·7	7·6	7·4	7·3	7·1	7·0	6·9	6·7
3300	8·1	7·9	7·8	7·7	7·5	7·4	7·2	7·1	6·9
3400	8·4	8·2	8·0	7·9	7·7	7·6	7·4	7·3	7·1
3500	8·6	8·5	8·3	8·1	7·9	7·8	7·6	7·5	7·3
3600	8·9	8·7	8·5	8·3	8·1	8·0	7·8	7·7	7·5
3700	9·1	8·9	8·7	8·5	8·4	8·2	8·0	7·9	7·7
3800	9·3	9·1	8·9	8·8	8·6	8·5	8·3	8·1	7·9
3900	9·5	9·4	9·2	9·0	8·8	8·7	8·5	8·4	8·2
4000	9·8	9·6	9·4	9·2	9·0	8·9	8·7	8·6	8·4
4100	10·1	9·9	9·7	9·5	9·3	9·1	8·9	8·8	8·6
4200	10·3	10·1	9·9	9·7	9·5	9·3	9·1	9·0	8·8
4300	10·6	10·4	10·1	9·9	9·7	9·6	9·4	9·2	9·0
4400	10·8	10·6	10·4	10·1	9·9	9·8	9·6	9·4	9·2
4500	11·0	10·8	10·6	10·4	10·2	10·0	9·8	9·6	9·4
4600	11·2	11·0	10·8	10·6	10·4	10·2	10·0	9·8	9·6
4700	11·5	11·2	11·0	10·8	10·6	10·4	10·2	10·1	9·9
4800	11·8	11·5	11·2	11·0	10·8	10·6	10·4	10·2	10·1
4900	12·0	11·8	11·5	11·3	11·1	10·9	10·6	10·4	10·2
5000	12·2	12·0	11·7	11·5	11·3	11·1	10·9	10·6	10·4
5100	12·5	12·2	11·9	11·7	11·5	11·3	11·1	10·9	10·7
5200	12·7	12·4	12·2	11·9	11·7	11·5	11·3	11·1	10·9
5300	12·9	12·7	12·4	12·2	11·9	11·7	11·5	11·3	11·1
5400	13·2	12·9	12·6	12·4	12·1	11·9	11·7	11·5	11·3
5500	13·4	13·2	12·9	12·6	12·3	12·1	11·9	11·7	11·5
5600	13·7	13·4	13·1	12·8	12·6	12·3	12·1	11·9	11·7
5700	13·9	13·6	13·3	13·1	12·8	12·6	12·3	12·1	11·9
5800	14·1	13·8	13·5	13·3	13·0	12·8	12·5	12·3	12·1
5900	14·4	14·1	13·8	13·5	13·2	13·0	12·7	12·5	12·3
6000	*14·6*	14·3	14·0	13·7	13·4	13·2	12·9	12·7	12·5

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	4° 30′	4° 35′	4° 40′	4° 45′	4° 50′	4° 55′	5° 0′	5° 10′	5° 20′
	m.	m.	m.	m.	m.	m.	m.		
2700	5·6	5·5							
2800	5·8	5·7	5·6	5·5					
2900	6·0	5·9	5·8	5·7	5·6	5·5			
3000	6·2	6·1	6·0	5·9	5·8	5·7	5·6		

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	4° 30′	4° 35′	4° 40′	4° 45′	4° 50′	4° 55′	5° 0′	5° 10′	5° 20′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
3100	6·4	6·3	6·2	6·1	6·0	5·9	5·8	5·6	5·5
3200	6·6	6·5	6·4	6·3	6·2	6·1	6·0	5·8	5·6
3300	6·8	6·7	6·6	6·5	6·4	6·3	6·2	6·0	5·8
3400	7·0	6·9	6·8	6·6	6·5	6·4	6·3	6·1	5·9
3500	7·2	7·1	7·0	6·8	6·7	6·6	6·5	6·3	6·1
3600	7·4	7·3	7·2	7·0	6·9	6·8	6·7	6·5	6·3
3700	7·6	7·5	7·4	7·2	7·1	7·0	6·9	6·7	6·5
3800	7·8	7·7	7·6	7·4	7·3	7·2	7·1	6·9	6·7
3900	8·0	7·9	7·8	7·6	7·5	7·4	7·3	7·0	6·8
4000	8·2	8·1	8·0	7·8	7·7	7·5	7·4	7·2	7·0
4100	8·5	8·3	8·2	8·0	7·9	7·7	7·6	7·3	7·1
4200	8·7	8·5	8·4	8·2	8·1	7·9	7·8	7·5	7·3
4300	8·9	8·7	8·6	8·4	8·3	8·1	8·0	7·7	7·4
4400	9·1	8·9	8·7	8·6	8·4	8·3	8·2	7·8	7·6
4500	9·3	9·1	8·9	8·7	8·6	8·5	8·4	8·0	7·7
4600	9·5	9·3	9·1	8·9	8·8	8·6	8·5	8·1	7·9
4700	9·7	9·5	9·3	9·1	9·0	8·8	8·7	8·3	8·1
4800	9·9	9·7	9·5	9·3	9·2	9·1	8·9	8·6	8·3
4900	10·1	9·9	9·7	9·5	9·4	9·2	9·1	8·8	8·5
5000	10·3	10·1	9·9	9·7	9·6	9·4	9·2	8·9	8·7
5100	10·5	10·3	10·1	9·9	9·8	9·6	9·5	9·1	8·8
5200	10·7	10·5	10·3	10·1	9·9	9·8	9·6	9·3	9·0
5300	10·9	10·7	10·5	10·3	10·1	9·9	9·8	9·5	9·2
5400	11·1	10·9	10·7	10·5	10·3	10·1	10·0	9·6	9·3
5500	11·3	11·1	10·9	10·7	10·5	10·4	10·2	9·8	9·5
5600	11·5	11·3	11·1	10·9	10·7	10·5	10·3	10·0	9·7
5700	11·7	11·5	11·3	11·1	10·9	10·7	10·5	10·2	9·9
5800	11·9	11·7	11·5	11·3	11·1	10·9	10·7	10·4	10·1
5900	12·1	11·9	11·7	11·5	11·3	11·1	10·9	10·5	10·2
6000	12·3	12·1	11·9	11·7	11·5	11·3	11·1	10·7	10·4

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	5° 30′	5° 40′	5° 50′	6° 0′	6° 10′	6° 20′	6° 30′	6° 40′	6° 50′
200									
300									
400									
500									
600									
700									
800									
900									
1000									
1100									
1200									
1300									
1400									
1500									
1600									
1700									
1800									
1900									
2000									
2100									
2200									
2300									
2400									
2500									
2600									
2700									
2800									
2900									
3000									

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	5° 30′	5° 40′	5° 50′	6° 0′	6° 10′	6° 20′	6° 30′	6° 40′	6° 50′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
3200	5·5								
3300	5·6	5·5							
3400	5·8	5·6	5·5						
3500	5·9	5·8	5·6	5·5					
3600	6·1	5·9	5·8	5·6	5·5				
3700	6·3	6·1	5·9	5·7	5·6	5·5			
3800	6·5	6·3	6·1	5·9	5·7	5·6	5·5		
3900	6·6	6·4	6·2	6·0	5·8	5·7	5·6	5·5	
4000	6·8	6·6	6·4	6·2	6·0	5·8	5·7	5·6	5·5
4100	6·9	6·7	6·5	6·3	6·1	6·0			
4200	7·1	6·9	6·7	6·5	6·2	6·1	6·0		
4300	7·2	7·0	6·8	6·6	6·4	6·3	6·1	6·0	
4400	7·4	7·2	7·0	6·8	6·6	6·4	6·3	6·1	6·0
4500	7·5	7·3	7·1	6·9	6·7	6·5	6·4	6·2	6·1
4600	7·7	7·5	7·3	7·1	6·9	6·7	6·5	6·4	6·2
4700	7·9	7·7	7·5	7·3	7·1	6·9	6·7	6·5	6·4
4800	8·1	7·9	7·7	7·5	7·3	7·1	6·9	6·7	6·5
4900	8·3	8·0	7·8	7·6	7·4	7·2	7·0	6·8	6·6
5000	8·4	8·2	7·9	7·7	7·5	7·3	7·1	6·9	6·8
5100	8·6	8·3	8·1	7·9	7·6	7·4	7·2	7·0	6·9
5200	8·8	8·5	8·3	8·0	7·8	7·6	7·4	7·2	7·0
5300	8·9	8·7	8·4	8·2	7·9	7·7	7·5	7·3	7·1
5400	9·1	8·8	8·6	8·3	8·1	7·9	7·7	7·5	7·3
5500	9·2	9·0	8·7	8·5	8·2	8·0	7·8	7·6	7·4
5600	9·4	9·1	8·9	8·6	8·4	8·2	8·0	7·8	7·6
5700	9·6	9·3	9·1	8·8	8·6	8·4	8·2	7·9	7·7
5800	9·8	9·5	9·3	9·0	8·8	8·6	8·4	8·1	7·9
5900	9·9	9·7	9·4	9·2	8·9	8·7	8·5	8·3	8·0
6000	10·1	9·8	9·6	9·3	9·1	8·8	8·6	8·4	8·2

Height in Feet.	**CORRECTED ANGULAR ALTITUDE OF SUMMIT.**								
	7° 0′	**7° 10′**	**7° 20′**	**7° 30′**	**7° 40′**	**7° 50′**	**8° 0′**		
200									
300									
400									
500									
600									
700									
800									
900									
1000									
1100									
1200									
1300									
1400									
1500									
1600									
1700									
1800									
1900									
2000									
2100									
2200									
2300									
2400									
2500									
2600									
2700									
2800									
2900									
3000									

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	7° 0′	7° 10′	7° 20′	7° 30′	7° 40′	7° 50′	8° 0′		
3100									
3200									
3300									
3400									
3500									
3600									
3700									
3800									
3900									
4000									
4100									
4200									
4300									
4400	m	m.	m.	m.	m.	m.	m.		
4500	6·0								
4600	6·1	6·0							
4700	6·2	6·1	6·0						
4800	6·4	6·3	6·1	6·0					
4900	6·5	6·4	6·2	6·1	5·9				
5000	6·6	6·5	6·3	6·2	6·1	6·0			
5100	6·8								
5200	6·9								
5300	7·0								
5400	7·1	7·0							
5500	7·2	7·1							
5600	7·3	7·2	7·0						
5700	7·5	7·3	7·2	7·0					
5800	7·6	7·5	7·3	7·2	7·0				
5900	7·8	7·6	7·5	7·3	7·2	7·0			
6000	8·0	7·8	7·6	7·5	7·3	7·2	7·0		

PART II. (B).

HEIGHTS FROM 6,000 TO 12,000 FEET.

DISTANCES FROM TEN TO EIGHTY MILES.

PART II. (B.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 11′	0° 12′	0° 13′	0° 14′	0° 15′	0° 16′	0° 17′	0° 18′	0° 19′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
6000			70·3	69·5	68·7	67·9	67·1	66·3	65·5
6200					70·0	69·2	68·4	67·6	66·9
6400						70·5	69·7	68·9	68·1
6600								70·2	69·4
6800									
7000									
7200	79·8	78·9	78·7	77·2	76·4	75·5	74·7	73·9	73·1
7400		80·2	79·3	78·5	77·6	76·8	76·0	75·2	74·4
7600			80·5	79·7	78·8	78·0	77·2	76·4	75·6
7800					80·0	79·2	78·4	77·6	76·8
8000						80·4	79·5	78·7	77·9
8200								79·9	79·1
8400									80·2

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 20′	0° 21′	0° 22′	0° 23′	0° 24′	0° 25′	0° 26′	0° 27′	0° 28′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
6000	64·7	64·0	63·2	62·5	61·8	61·1	60·4	59·7	59·0
6200	66·1	65·3	64·5	63·8	63·1	62·3	61·6	60·9	60·3
6400	67·4	66·6	65·8	65·0	64·3	63·6	62·9	62·2	61·5
6600	68·6	67·9	67·1	66·3	65·6	64·9	64·2	63·5	62·8
6800	69·9	69·1	68·3	67·6	66·8	66·1	65·4	64·7	64·0
7000		70·4	69·6	68·8	68·1	67·3	66·6	65·9	65·3
7200	72·4	71·6	70·8	70·0	69·3	68·5	67·8	67·1	66·4
7400	73·6	72·8	72·0	71·2	70·5	69·7	69·0	68·3	67·6
7600	74·8	74·0	73·2	72·4	71·7	70·9	70·2	69·5	68·8
7800	76·0	75·2	74·5	73·7	72·9	72·1	71·4	70·7	70·0
8000	77·1	76·4	75·6	74·8	74·0	73·2	72·5	71·8	71·1
8200	78·3	77·5	76·8	75·9	75·2	74·4	73·7	72·9	72·2
8400	79·4	78·6	77·9	77·1	76·3	75·6	74·8	74·1	73·3
8600		79·8	79·0	78·2	77·5	76·7	76·0	75·2	74·5
8800			80·1	79·3	78·5	77·8	77·0	76·3	75·6
9000					79·6	78·9	78·1	77·4	76·7
9200						79·9	79·2	78·4	77·7
9400							80·3	79·5	78·8
9600									79·8

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 29′	0° 30′	0° 31′	0° 32′	0° 33′	0° 34′	0° 35′	0° 36′	0° 37′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
6000	58·3	57·6	56·9	56·3	55·7	55·1	54·5	53·9	53·3
6200	59·6	58·9	58·2	57·6	56·9	56·3	55·7	55·1	54·5
6400	60·8	60·1	59·5	58·8	58·2	57·5	56·9	56·3	55·7
6600	62·1	61·4	60·7	60·1	59·4	58·8	58·2	57·6	56·9
6800	63·3	62·6	61·9	61·3	60·6	60·0	59·3	58·7	58·1
7000	64·6	63·9	63·2	62·5	61·8	61·2	60·5	59·9	59·3
7200	65·7	65·0	64·3	63·7	63·0	62·4	61·7	61·1	60·4
7400	66·9	66·2	65·5	64·9	64·2	63·6	62·9	62·3	61·6
7600	68·1	67·4	66·7	66·0	65·3	64·7	64·0	63·4	62·8
7800	69·3	68·6	67·9	67·2	66·5	65·8	65·2	64·5	63·9
8000	70·4	69·7	69·0	68·3	67·6	66·9	66·3	65·6	65·0
8200	71·5	70·8	70·1	69·4	68·7	68·1	67·4	66·8	66·1
8400	72·6	71·9	71·2	70·5	69·9	69·2	68·5	67·8	67·2
8600	73·7	73·0	72·3	71·6	70·9	70·3	69·6	68·9	68·3
8800	74·8	74·1	73·4	72·7	72·0	71·3	70·6	70·0	69·3
9000	75·9	75·2	74·5	73·8	73·1	72·4	71·7	71·1	70·4
9200	77·0	76·2	75·5	74·8	74·1	73·4	72·7	72·1	71·4
9400	78·0	77·3	76·6	75·9	75·2	74·5	73·8	73·1	72·5
9600	79·1	78·3	77·6	76·9	76·2	75·5	74·8	74·1	73·5
9800	80·1	79·4	78·7	78·0	77·3	76·6	75·9	75·2	74·6
10000			79·7	79·0	78·3	77·6	76·9	76·2	75·6
10200				80·0	79·3	78·6	77·9	77·2	76·5
10400					80·3	79·6	78·9	78·2	77·6
10600							79·9	79·2	78·5
10800								80·2	79·5
11000									80·4

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 38′	0° 39′	0° 40′	0° 41′	0° 42′	0° 43′	0° 44′	0° 45′	0° 46′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
6000	52·7	52·1	51·5	50·9	50·4	49·8	49·3	48·8	48·3
6200	53·9	53·4	52·8	52·2	51·6	51·0	50·5	50·0	49·5
6400	55·1	54·5	53·9	53·4	52·8	52·2	51·7	51·1	50·6
6600	56·3	55·7	55·1	54·5	54·0	53·4	52·9	52·3	51·8
6800	57·5	56·9	56·3	55·7	55·2	54·6	54·0	53·4	52·9
7000	58·7	58·1	57·5	56·9	56·4	55·8	55·2	54·6	54·1
7200	59·8	59·2	58·6	58·0	57·5	56·9	56·3	55·8	55·2
7400	61·0	60·4	59·8	59·2	58·6	58·0	57·5	56·9	56·4
7600	62·1	61·5	60·9	60·3	59·7	59·2	58·6	58·0	57·4
7800	63·3	62·6	62·1	61·4	60·8	60·2	59·7	59·1	58·5
8000	64·4	63·7	63·1	62·5	61·9	61·3	60·7	60·2	59·6
8200	65·5	64·8	64·2	63·6	63·0	62·4	61·8	61·2	60·7
8400	66·6	65·9	65·3	64·6	64·0	63·5	62·9	62·3	61·7
8600	67·7	67·0	66·4	65·7	65·1	64·5	64·0	63·4	62·8
8800	68·7	68·1	67·4	66·8	66·1	65·6	65·0	64·4	63·8
9000	69·7	69·1	68·5	67·8	67·2	66·6	66·0	65·4	64·8
9200	70·7	70·1	69·5	68·9	68·2	67·6	67·0	66·4	65·8
9400	71·8	71·1	70·5	69·9	69·3	68·6	68·0	67·4	66·8
9600	72·9	72·2	71·5	70·9	70·3	69·6	69·0	68·4	67·8
9800	73·9	73·3	72·6	71·9	71·3	70·6	70·0	69·4	68·8
10000	74·9	74·3	73·6	72·9	72·3	71·6	71·0	70·4	69·8
10200	75·9	75·2	74·6	73·9	73·3	72·6	72·0	71·4	70·8
10400	76·9	76·2	75·5	74·9	74·3	73·6	73·0	72·4	71·8
10600	77·9	77·2	76·5	75·8	75·2	74·6	74·0	73·3	72·7
10800	78·8	78·2	77·4	76·8	76·1	75·5	74·9	74·3	73·7
11000	79·8	79·1	78·4	77·7	77·1	76·4	75·8	75·2	74·6
11200	80·7	80·0	79·3	78·7	78·0	77·4	76·8	76·2	75·6
11400			80·3	79·6	79·0	78·3	77·7	77·1	76·5
11600				80·6	79·9	79·3	78·6	78·0	77·4
11800						80·2	79·6	78·9	78·3
12000							80·5	79·8	79·2

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 47′	**0° 48′**	**0° 49′**	**0° 50′**	**0° 51′**	**0° 52′**	**0° 53′**	**0° 54′**	**0° 55′**
	m.	m.	m.	m.	m.	m.	m.	m.	m.
6000	47·8	47·3	46·8	46·3	45·9	45·4	45·0	44·5	44·1
6200	49·0	48·5	48·0	47·5	47·0	46·5	46·0	45·6	45·1
6400	50·1	49·6	49·1	48·6	48·1	47·6	47·1	46·7	46·2
6600	51·3	50·8	50·3	49·8	49·3	48·8	48·3	47·9	47·4
6800	52·4	51·9	51·4	50·9	50·4	49·9	49·4	49·0	48·5
7000	53·6	53·1	52·5	52·0	51·5	51·0	50·5	50·0	49·5
7200	54·7	54·2	53·6	53·1	52·5	52·0	51·5	51·0	50·6
7400	55·8	55·3	54·7	54·2	53·6	53·1	52·6	52·1	51·6
7600	56·9	56·4	55·8	55·3	54·7	54·2	53·7	53·2	52·7
7800	58·0	57·5	56·9	56·4	55·8	55·3	54·8	54·3	53·8
8000	59·0	58·5	58·0	57·4	56·9	56·3	55·8	55·3	54·8
8200	60·1	59·5	59·0	58·5	57·9	57·4	56·9	56·4	55·9
8400	61·1	60·6	60·0	59·5	59·0	58·4	57·9	57·4	56·9
8600	62·2	61·6	61·0	60·5	60·0	59·5	58·9	58·4	57·9
8800	63·2	62·6	62·0	61·5	61·0	60·5	59·9	59·4	58·8
9000	64·2	63·7	63·1	62·6	62·0	61·5	60·9	60·4	59·8
9200	65·2	64·7	64·2	63·6	63·0	62·4	61·9	61·4	60·8
9400	66·2	65·7	65·1	64·6	64·0	63·4	62·9	62·4	61·8
9600	67·2	66·7	66·1	65·5	64·9	64·4	63·9	63·4	62·8
9800	68·2	67·7	67·1	66·5	65·9	65·4	64·8	64·3	63·8
10000	69·2	68·6	68·0	67·4	66·9	66·4	65·8	65·3	64·7
10200	70·2	69·6	69·0	68·4	67·8	67·3	66·8	66·2	65·7
10400	71·2	70·6	70·0	69·4	68·8	68·2	67·7	67·2	66·6
10600	72·1	71·5	70·9	70·3	69·7	69·2	68·6	68·1	67·5
10800	73·1	72·5	71·9	71·3	70·7	70·1	69·5	69·0	68·4
11000	74·0	73·4	72·9	72·2	71·6	71·0	70·4	69·9	69·3
11200	74·9	74·3	73·8	73·2	72·5	71·9	71·3	70·8	70·2
11400	75·8	75·2	74·6	74·0	73·4	72·8	72·2	71·7	71·1
11600	76·7	76·1	75·5	74·9	74·3	73·7	73·1	72·6	72·0
11800	77·6	77·0	76·4	75·8	75·2	74·6	74·0	73·5	72·9
12000	78·5	77·9	77·3	76·7	76·1	75·5	74·9	74·3	73·8

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 56′	0° 57′	0° 58′	0° 59′	1° 0′	1° 1′	1° 2′	1° 3′	1° 4′
	m	m.	m.	m.	m.	m.	m.	m.	m.
6000	43·6	43·2	42·7	42·3	41·9	41·5	41·1	40·7	40·3
6200	44·7	44·2	43·8	43·4	43·0	42·6	42·2	41·8	41·4
6400	45·8	45·3	44·9	44·4	44·0	43·6	43·2	42·8	42·4
6600	46·9	46·4	46·0	45·5	45·1	44·7	44·3	43·9	43·5
6800	48·0	47·5	47·1	46·6	46·2	45·8	45·4	45·0	44·5
7000	49·1	48·6	48·2	47·7	47·3	46·9	46·5	46·0	45·6
7200	50·1	49·6	49·2	48·8	48·3	47·9	47·5	47·0	46·6
7400	51·2	50·7	50·3	49·8	49·4	48·9	48·5	48·0	47·6
7600	52·2	51·8	51·3	50·8	50·4	50·0	49·5	49·0	48·6
7800	53·3	52·8	52·4	51·9	51·4	50·9	50·5	50·0	49·6
8000	54·3	53·8	53·4	52·9	52·4	51·9	51·5	51·0	50·6
8200	55·4	54·9	54·4	53·9	53·4	52·9	52·5	52·0	51·6
8400	56·4	55·9	55·4	54·9	54·4	53·9	53·5	53·0	52·5
8600	57·4	56·9	56·4	55·9	55·4	54·9	54·4	54·0	53·5
8800	58·3	57·8	57·4	56·8	56·3	55·8	55·4	54·9	54·5
9000	59·3	58·8	58·3	57·7	57·2	56·8	56·4	55·9	55·4
9200	60·3	59·8	59·3	58·8	58·3	57·8	57·4	56·9	56·4
9400	61·3	60·8	60·3	59·8	59·3	58·8	58·3	57·8	57·3
9600	62·2	61·7	61·2	60·7	60·2	59·7	59·2	58·8	58·3
9800	63·2	62·6	62·1	61·6	61·1	60·6	60·1	59·7	59·2
10000	64·2	63·6	63·0	62·6	62·1	61·6	61·1	60·6	60·1
10200	65·1	64·6	64·0	63·5	63·0	62·5	62·0	61·5	61·0
10400	66·1	65·5	65·0	64·4	63·9	63·4	62·9	62·4	61·9
10600	67·0	66·4	65·9	65·3	64·8	64·3	63·8	63·3	62·8
10800	67·9	67·3	66·8	66·2	65·7	65·1	64·6	64·2	63·7
11000	68·8	68·2	67·7	67·1	66·6	66·0	65·5	65·0	64·5
11200	69·7	69·1	68·6	68·0	67·5	66·9	66·4	65·9	65·4
11400	70·6	70·0	69·4	68·8	68·4	67·8	67·3	66·8	66·3
11600	71·5	70·9	70·3	69·8	69·3	68·7	68·2	67·7	67·2
11800	72·3	71·8	71·2	70·6	70·1	69·6	69·1	68·5	68·0
12000	73·2	72·7	72·1	71·5	71·0	70·5	69·9	69·4	68·8

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	1° 5′	1° 6′	1° 7′	1° 8′	1° 10′	1° 12′	1° 14′	1° 16′	1° 18′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
6000	40·0	39·6	39·2	38·8	38·1	37·4	36·7	36·0	35·4
6200	41·0	40·6	40·2	39·8	39·1	38·4	37·7	37·1	36·4
6400	42·0	41·6	41·2	40·8	40·2	39·4	38·7	38·0	37·4
6600	43·1	42·7	42·3	41·9	41·2	40·5	39·7	39·0	38·3
6800	44·1	43·7	43·3	42·9	42·2	41·4	40·7	40·0	39·3
7000	45·1	44·7	44·4	44·0	43·2	42·4	41·7	41·0	40·3
7200	46·2	45·7	45·4	45·0	44·2	43·4	42·6	42·0	41·3
7400	47·2	46·8	46·4	45·9	45·1	44·4	43·6	42·9	42·2
7600	48·1	47·7	47·4	46·9	46·1	45·3	44·6	43·9	43·2
7800	49·1	48·7	48·3	47·9	27·1	46·3	45·6	44·8	44·1
8000	50·1	49·7	49·3	48·8	48·0	47·2	46·5	45·7	45·0
8200	51·1	50·7	50·3	49·9	49·0	48·2	47·4	46·7	45·9
8400	52·1	51·6	51·3	50·8	49·9	49·1	48·3	47·6	46·8
8600	53·0	52·6	52·2	51·8	50·8	50·0	49·2	48·4	47·7
8800	54·0	53·6	53·2	52·7	51·8	50·9	50·1	49·4	48·6
9000	55·0	54·5	54·1	53·6	52·7	51·9	51·1	50·3	49·5
9200	56·0	55·5	55·0	54·6	53·7	52·8	52·0	51·2	50·4
9400	56·9	56·4	55·9	55·5	54·6	53·7	52·8	52·0	51·2
9600	57·8	57·3	56·8	56·4	55·5	54·6	53·7	52·9	52·1
9800	58·7	58·2	57·7	57·3	56·4	55·5	54·6	53·8	53·0
10000	59·6	59·1	58·6	58·2	57·3	56·4	55·5	54·7	53·8
10200	60·5	60·0	59·5	59·1	58·2	57·3	56·4	55·5	54·7
10400	61·4	60·9	60·4	60·0	59·0	58·2	57·2	56·4	55·6
10600	62·3	61·8	61·3	60·9	59·9	59·0	58·1	57·3	56·4
10800	63·2	62·7	62·2	61·7	60·8	59·8	59·0	58·1	57·2
11000	64·0	63·5	63·1	62·6	61·6	60·7	59·8	58·9	58·0
11200	64·9	64·4	64·0	63·5	62·5	61·6	60·7	59·7	58·8
11400	65·8	65·3	64·8	64·3	63·3	62·4	61·5	60·6	59·7
11600	66·7	66·2	65·7	65·2	64·2	63·2	62·3	61·4	60·5
11800	67·5	67·0	66·5	66·0	65·0	64·1	63·1	62·2	61·3
12000	68·3	67·8	67·3	66·5	65·9	64·9	63·9	63·0	62·1

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	1° 20′	1° 22′	1° 24′	1° 26′	1° 28′	1° 30′	1° 32′	1° 34′	1° 36′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
6000	34·8	34·2	33·6	33·1	32·5	32·0	31·5	31·0	30·5
6200	35·8	35·2	34·6	34·0	33·5	33·0	32·4	31·9	31·4
6400	36·8	36·2	35·6	35·0	34·4	33·8	33·3	32·8	32·2
6600	37·7	37·1	36·5	35·9	35·3	34·7	34·2	33·6	33·1
6800	38·6	38·0	37·4	36·8	36·3	35·6	35·1	34·5	34·0
7000	39·6	38·9	38·3	37·7	37·2	36·6	36·0	35·4	34·9
7200	40·6	39·9	39·2	38·6	38·0	37·4	36·8	36·3	35·8
7400	41·5	40·8	40·2	39·5	38·9	38·3	37·7	37·1	36·6
7600	42·5	41·7	41·1	40·4	39·8	39·2	38·6	38·0	37·4
7800	43·4	42·7	42·0	41·3	40·7	40·1	39·5	38·9	38·3
8000	44·3	43·6	42·9	42·2	41·6	40·9	40·3	39·7	39·1
8200	45·2	44·5	43·8	43·1	42·4	41·8	41·1	40·5	39·9
8400	46·0	45·4	44·7	44·0	43·2	42·6	42·0	41·4	40·7
8600	46·9	46·2	45·6	44·8	44·1	43·4	42·8	42·2	41·6
8800	47·8	47·0	46·4	45·7	45·0	44·3	43·6	43·0	42·4
9000	48·7	47·9	47·2	46·5	45·8	45·2	44·5	43·8	43·2
9200	49·6	48·8	48·0	47·3	46·6	46·0	45·4	44·7	44·0
9400	50·5	49·7	48·9	48·1	47·5	46·8	46·2	45·5	44·8
9600	51·3	50·6	49·8	49·0	48·3	47·6	47·0	46·3	45·7
9800	52·2	51·4	50·6	49·9	49·2	48·5	47·8	47·1	46·5
10000	53·0	52·3	51·4	50·7	50·0	49·3	48·6	47·9	47·2
10200	53·9	53·1	52·3	51·5	50·8	50·1	49·4	48·7	48·0
10400	54·7	54·0	53·2	52·3	51·6	50·9	50·2	49·5	48·8
10600	55·6	54·8	54·0	53·2	52·4	51·7	51·0	50·3	49·6
10800	56·4	55·6	54·8	54·0	53·2	52·4	51·7	51·0	50·4
11000	57·2	56·4	55·6	54·8	54·0	53·2	52·5	51·8	51·1
11200	58·0	57·2	56·4	55·6	54·8	54·0	53·3	52·5	51·8
11400	58·8	58·0	57·2	56·4	55·6	54·8	54·1	53·3	52·6
11600	59·7	58·8	58·0	57·2	56·4	55·6	54·8	54·1	53·3
11800	60·5	59·6	58·8	58·0	57·2	56·4	55·6	54·8	54·1
12000	*61·3*	*60·4*	59·6	58·7	57·9	57·1	56·4	55·6	54·9

PART II. (B.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	1° 38′	1° 40′	1° 42′	1° 44′	1° 46′	1° 48′	1° 50′	1° 52′	1° 54′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
6000	30·0	29·5	29·0	28·6	28·2	27·8	27·4	27·0	26·6
6200	31·0	30·5	30·0	29·5	29·0	28·5	28·1	27·8	27·4
6400	31·8	31·3	30·8	30·4	29·9	29·4	28·9	28·6	28·2
6600	32·6	32·1	31·6	31·2	30·7	30·3	29·8	29·4	29·0
6800	33·5	33·0	32·5	32·0	31·6	31·1	30·6	30·2	29·7
7000	34·3	33·8	33·3	32·8	32·4	31·9	31·4	31·0	30·5
7200	35·2	34·7	34·1	33·6	33·2	32·7	32·2	31·8	31·3
7400	36·0	35·5	35·0	34·5	33·9	33·5	33·0	32·6	32·1
7600	36·9	36·3	35·8	35·3	34·8	34·2	33·8	33·4	32·9
7800	37·7	37·2	36·6	36·1	35·6	35·1	34·6	34·2	33·7
8000	38·5	38·0	37·4	36·9	36·4	35·9	35·4	34·9	34·4
8200	39·3	38·8	38·2	37·7	37·2	36·7	36·2	35·7	35·2
8400	40·2	39·6	39·0	38·5	37·9	37·4	36·9	36·4	35·9
8600	41·0	40·4	39·8	39·2	38·7	38·2	37·7	37·2	36·7
8800	41·8	41·2	40·6	40·0	39·4	38·9	38·4	37·9	37·4
9000	42·6	42·0	41·4	40·8	40·2	39·7	39·2	38·7	38·2
9200	43·4	42·8	42·2	41·6	41·0	40·5	39·9	39·4	38·9
9400	44·2	43·6	43·0	42·4	41·8	41·3	40·7	40·2	39·7
9600	45·0	44·5	43·7	43·2	42·6	42·0	41·5	40·9	40·4
9800	45·8	45·2	44·4	43·9	43·3	42·8	42·2	41·7	41·1
10000	46·6	45·9	45·3	44·7	44·1	43·5	42·9	42·4	41·8
10200	47·3	46·7	46·1	45·5	44·9	44·3	43·7	43·1	42·5
10400	48·1	47·5	46·8	46·2	45·6	45·0	44·4	43·8	43·3
10600	48·9	48·3	47·6	47·0	46·4	45·8	45·2	44·6	44·0
10800	49·7	49·0	48·4	47·7	47·1	46·5	45·9	45·3	44·7
11000	50·4	49·8	49·1	48·5	47·8	47·2	46·6	46·0	45·5
11200	51·2	50·5	49·8	49·2	48·6	47·9	47·3	46·7	46·2
11400	51·9	51·2	50·6	49·9	49·3	48·7	48·1	47·5	46·9
11600	52·7	51·9	51·3	50·7	50·0	49·4	48·8	48·2	47·6
11800	53·4	52·7	52·0	51·4	50·7	50·1	49·5	48·9	48·3
12000	54·2	53·5	52·8	52·1	51·5	50·8	50·1	49·5	48·9

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	1° 56′	1° 58′	2° 0′	2° 2′	2° 4′	2° 6′	2° 8′	2° 10′	2° 12′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
6000	26·2	25·9	25·5	25·2	24·8	24·5	24·2	23·9	23·6
6200	27·0	26·6	26·3	26·0	25·6	25·3	24·9	24·6	24·3
6400	27·8	27·4	27·0	26·7	26·4	26·0	25·6	25·3	25·0
6600	28·6	28·2	27·8	27·4	27·1	26·7	26·4	26·1	25·8
6800	29·4	29·0	28·6	28·2	27·8	27·5	27·1	26·8	26·5
7000	30·1	29·8	29·4	29·0	28·6	28·2	27·9	27·5	27·2
7200	30·9	30·5	30·2	29·8	29·4	29·0	28·6	28·2	27·9
7400	31·7	31·3	30·9	30·5	30·1	29·7	29·3	28·9	28·5
7600	32·4	32·0	31·6	31·2	30·8	30·4	30·0	29·7	29·3
7800	33·2	32·8	32·4	31·9	31·5	31·1	30·7	30·3	30·0
8000	33·9	33·5	33·1	32·7	32·3	31·8	31·4	31·1	30·7
8200	34·7	34·2	33·8	33·4	33·0	32·6	32·1	31·7	31·4
8400	35·5	35·0	34·5	34·1	33·7	33·3	32·8	32·4	32·0
8600	36·2	35·7	35·3	34·8	34·4	34·0	33·6	33·1	32·7
8800	36·9	36·4	36·0	35·5	35·1	34·7	34·3	33·9	33·4
9000	37·7	37·2	36·8	36·3	35·8	35·4	35·0	34·5	34·1
9200	38·4	37·9	37·5	37·0	36·5	36·1	35·6	35·3	34·8
9400	39·2	38·7	38·2	37·7	37·2	36·8	36·3	35·9	35·5
9600	39·9	39·4	38·9	38·4	37·9	37·5	37·0	36·6	36·2
9800	40·6	40·1	39·6	39·1	38·6	38·2	37·7	37·1	36·8
10000	41·3	40·8	40·3	39·8	39·3	38·8	38·3	37·9	37·5
10200	42·0	41·5	41·0	40·5	40·0	39·5	39·0	38·5	38·1
10400	42·7	42·2	41·7	41·2	40·7	40·2	39·7	39·3	38·8
10600	43·5	42·9	42·4	41·9	41·4	40·9	40·4	40·0	39·5
10800	44·2	43·6	43·0	42·6	42·1	41·6	41·0	40·6	40·1
11000	44·9	44·3	43·7	43·2	42·8	42·3	41·7	41·2	40·8
11200	45·6	45·0	44·4	43·9	43·4	42·9	42·4	41·9	41·4
11400	46·3	45·7	45·2	44·6	44·1	43·6	43·1	42·6	42·1
11600	47·0	46·4	45·8	45·3	44·8	44·2	43·7	43·2	42·8
11800	47·7	47·1	46·5	46·0	45·4	44·9	44·4	43·9	43·4
12000	48·4	47·8	47·2	46·6	46·1	45·6	45·0	44·5	44·0

PART II. (B.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	2° 14′	2° 16′	2° 18′	2° 20′	2° 22′	2° 24′	2° 26′	2° 28′	2° 30′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
6000	23·3	23·0	22·7	22·4	22·1	21·8	21·6	21·4	21·1
6200	24·0	23·7	23·4	23·1	22·8	22·5	22·2	22·0	21·7
6400	24·7	24·4	24·1	23·8	23·5	23·2	22·9	22·6	22·4
6600	25·4	25·1	24·8	24·5	24·2	23·9	23·6	23·4	23·1
6800	26·2	25·8	25·5	25·2	24·9	24·6	24·3	24·0	23·8
7000	26·8	26·5	26·2	25·9	25·6	25·3	25·0	24·7	24·4
7200	27·6	27·2	26·9	26·6	26·3	26·0	25·7	25·4	25·1
7400	28·2	27·9	27·5	27·2	26·9	26·6	26·3	26·0	25·7
7600	28·9	28·6	28·3	28·0	27·6	27·3	27·0	26·6	26·3
7800	29·6	29·3	28·9	28·6	28·3	27·9	27·6	27·3	26·9
8000	30·3	30·0	29·6	29·2	28·9	28·5	28·2	27·9	27·6
8200	31·0	30·6	30·2	29·9	29·5	29·2	28·8	28·5	28·2
8400	31·7	31·3	30·9	30·5	30·2	29·8	29·5	29·1	28·8
8600	32·3	32·0	31·6	31·2	30·8	30·5	30·1	29·8	29·5
8800	33·0	32·6	32·3	31·9	31·5	31·1	30·8	30·4	30·1
9000	33·7	33·3	33·0	32·6	32·2	31·8	31·4	31·1	30·7
9200	34·4	34·0	33·6	33·2	32·9	32·5	32·1	31·8	31·4
9400	35·0	34·6	34·2	33·8	33·4	33·1	32·7	32·3	32·0
9600	35·8	35·3	34·9	34·5	34·1	33·8	33·4	33·0	32·6
9800	36·4	36·0	35·5	35·1	34·7	34·4	34·0	33·6	33·2
10000	37·1	36·6	36·2	35·8	35·4	35·0	34·6	34·2	33·8
10200	37·7	37·3	36·8	36·4	36·0	35·6	35·2	34·8	34·4
10400	38·4	38·0	37·6	37·1	36·7	36·3	35·9	35·5	35·1
10600	39·0	38·6	38·1	37·7	37·3	36·9	36·5	36·1	35·7
10800	39·6	39·2	38·8	38·3	37·9	37·5	37·1	36·7	36·3
11000	40·3	39·8	39·4	39·0	38·5	38·1	37·7	37·3	36·9
11200	41·0	40·5	40·0	39·6	39·2	38·8	38·3	37·9	37·5
11400	41·6	41·1	40·6	40·2	39·7	39·3	38·9	38·5	38·1
11600	42·3	41·8	41·3	40·8	40·4	39·9	39·5	39·1	38·7
11800	42·9	42·4	42·0	41·5	41·0	40·6	40·1	39·7	39·3
12000	43·5	43·0	42·5	42·1	41·6	41·2	40·7	40·3	39·9

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	2° 32′	2° 34′	2° 36′	2° 38′	2° 40′	2° 42′	2° 44′	2° 46′	2° 48′
	m	m.	m.	m.	m.	m.	m.	m.	m.
6000	20·9	20·6	20·4	20·2	20·0	19·7	19·5	19·3	19·1
6200	21·5	21·2	21·0	20·8	20·6	20·3	20·1	19·9	19·7
6400	22·1	21·9	21·6	21·4	21·2	21·0	20·7	20·5	20·3
6600	22·8	22·5	22·3	22·0	21·8	21·5	21·3	21·1	20·9
6800	23·5	23·2	23·0	22·7	22·4	22·2	22·0	21·7	21·4
7000	24·1	23·8	23·6	23·3	23·1	22·8	22·6	22·3	22·1
7200	24·8	24·5	24·2	24·0	23·7	23·5	23·2	23·0	22·7
7400	25·4	25·1	24·8	24·5	24·3	24·0	23·8	23·5	23·3
7600	26·0	25·8	25·5	25·2	25·0	24·7	24·4	24·2	24·0
7800	26·6	26·4	26·1	25·8	25·5	25·2	25·0	24·7	24·5
8000	27·3	27·0	26·7	26·4	26·1	25·9	25·6	25·3	25·1
8200	27·9	27·6	27·3	27·0	26·7	26·5	26·2	25·9	25·6
8400	28·5	28·2	27·9	27·6	27·3	27·0	26·8	26·5	26·2
8600	29·2	28·8	28·5	28·2	27·9	27·6	27·3	27·0	26·8
8800	29·8	29·5	29·1	28·8	28·5	28·2	27·9	27·6	27·3
9000	30·4	30·0	29·7	29·4	29·1	28·8	28·5	28·2	27·9
9200	31·0	30·7	30·3	30·0	29·7	29·4	29·1	28·8	28·2
9400	31·6	31·3	31·0	30·6	30·3	30·0	29·7	29·4	29·1
9600	32·2	31·9	31·6	31·3	30·9	30·6	30·3	30·0	29·7
9800	32·8	32·5	32·2	31·8	31·5	31·1	30·8	30·5	30·2
10000	33·4	33·1	32·8	32·5	32·1	31·8	31·4	31·1	30·8
10200	34·1	33·7	33·4	33·0	32·7	32·3	32·0	31·7	31·4
10400	34·7	34·4	34·0	33·6	33·3	33·0	32·6	32·3	32·0
10600	35·3	35·0	34·6	34·2	33·8	33·5	33·2	32·8	32·5
10800	35·9	35·5	35·1	34·8	34·4	34·1	33·7	33·4	33·1
11000	36·5	36·1	35·7	35·3	35·0	34·6	34·3	34·0	33·6
11200	37·1	36·7	36·3	36·0	35·6	35·2	34·8	34·5	34·2
11400	37·7	37·3	36·9	36·5	36·2	35·8	35·4	35·0	34·7
11600	38·3	37·9	37·5	37·1	36·7	36·4	36·0	35·6	35·3
11800	38·9	38·6	38·1	37·7	37·3	36·9	36·6	36·2	35·8
12000	39·5	39·1	38·7	38·3	37·9	37·5	37·1	36·8	36·4

PART II. (B.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	2° 50′	2° 52′	2° 54′	2° 56′	2° 58′	3° 0′	3° 2′	3° 4′	3° 6′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
6000	18·9	18·7	18·5	18·3	18·1	17·9	17·7	17·6	17·4
6200	19·5	19·3	19·1	18·9	18·7	18·5	18·3	18·1	17·9
6400	20·1	19·9	19·7	19·4	19·2	19·0	18·9	18·7	18·5
6600	20·7	20·5	20·3	20·1	19·8	19·6	19·4	19·3	19·1
6800	21·2	21·0	20·8	20·6	20·4	20·2	20·0	19·8	19·7
7000	21·8	21·6	21·4	21·2	21·0	20·8	20·6	20·4	20·2
7200	22·5	22·2	22·0	21·7	21·5	21·3	21·1	20·9	20·7
7400	23·0	22·8	22·5	22·3	22·1	21·9	21·7	21·5	21·3
7600	23·7	23·4	23·2	22·9	22·7	22·5	22·3	22·0	21·8
7800	24·2	24·0	23·7	23·5	23·2	23·0	22·8	22·6	22·3
8000	24·8	24·5	24·3	24·0	23·8	23·6	23·4	23·1	22·9
8200	25·4	25·1	24·8	24·6	24·3	24·1	23·9	23·7	23·4
8400	25·9	25·7	25·4	25·1	24·9	24·6	24·4	24·2	24·0
8600	26·5	26·2	26·0	25·7	25·4	25·2	25·0	24·7	24·5
8800	27·1	26·8	26·5	26·2	26·0	25·7	25·5	25·2	25·0
9000	27·6	27·4	27·1	26·8	26·5	26·3	26·0	25·8	25·5
9200	28·5	27·9	27·7	27·4	27·1	26·8	26·6	26·4	26·1
9400	28·8	28·5	28·2	27·9	27·6	27·4	27·1	26·9	26·6
9600	29·4	29·1	28·8	28·5	28·2	27·9	27·7	27·4	27·1
9800	29·9	29·6	29·3	29·0	28·8	28·5	28·2	28·0	27·6
10000	30·5	30·2	29·9	29·6	29·3	29·0	28·8	28·5	28·3
10200	31·1	30·8	30·5	30·2	29·9	29·6	29·3	29·0	28·7
10400	31·7	31·4	31·1	30·8	30·5	30·2	29·9	29·6	29·3
10600	32·2	31·9	31·6	31·3	31·0	30·7	30·4	30·1	29·8
10800	32·8	32·4	32·1	31·8	31·5	31·2	30·9	30·6	30·4
11000	33·3	33·0	32·6	32·3	32·0	31·7	31·4	31·1	30·8
11200	33·9	33·5	33·2	32·9	32·6	32·3	32·0	31·7	31·4
11400	34·4	34·1	33·7	33·4	33·1	32·8	32·5	32·2	31·9
11600	35·0	34·6	34·3	34·0	33·6	33·3	33·0	32·7	32·4
11800	35·5	35·2	34·8	34·5	34·1	33·8	33·5	33·2	32·9
12000	36·0	35·7	35·4	35·0	34·7	34·4	34·0	33·7	33·4

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	3° 8′	3° 10′	3° 15′	3° 20′	3° 25′	3° 30′	3° 35′	3° 40′	3° 45′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
6000	17·2	17·1	16·7	16·3	16·0	15·6	15·2	14·9	14·6
6200	17·8	17·5	17·1	16·8	16·4	16·1	15·7	15·4	15·1
6400	18·3	18·1	17·6	17·2	16·9	16·5	16·2	15·9	15·6
6600	18·9	18·7	18·2	17·8	17·4	17·1	16·7	16·3	16·0
6800	19·5	19·2	18·8	18·4	18·0	17·6	17·2	16·8	16·4
7000	20·0	19·8	19·3	18·9	18·5	18·1	17·7	17·3	17·0
7200	20·5	20·3	19·8	19·4	19·0	18·6	18·2	17·8	17·4
7400	21·1	20·9	20·4	19·9	19·4	19·0	18·6	18·2	17·8
7600	21·6	21·4	20·9	20·4	19·9	19·5	19·1	18·7	18·3
7800	22·1	21·9	21·4	20·9	20·5	20·0	19·6	19·2	18·8
8000	22·6	22·4	21·9	21·4	20·9	20·4	20·0	19·6	19·2
8200	23·2	23·0	22·5	22·0	21·5	21·0	20·5	20·1	19·7
8400	23·7	23·5	23·0	22·5	22·0	21·5	21·0	20·6	20·1
8600	24·3	24·0	23·5	23·0	22·5	22·0	21·6	21·1	20·6
8800	24·8	24·5	24·0	23·5	23·0	22·5	22·0	21·6	21·1
9000	25·3	25·1	24·5	24·0	23·5	23·0	22·5	22·0	21·6
9200	25·8	25·6	25·1	24·5	24·0	23·5	23·0	22·5	22·0
9400	26·4	26·1	25·5	25·0	24·5	23·9	23·4	22·9	22·4
9600	26·9	26·6	26·1	25·5	25·0	24·5	23·9	23·4	22·9
9800	27·3	27·2	26·6	26·0	25·4	24·9	24·4	23·9	23·4
10000	27·9	27·7	27·1	26·5	25·9	25·4	24·9	24·4	23·9
10200	28·5	28·2	27·6	27·0	26·4	25·8	25·3	24·8	24·3
10400	29·0	28·7	28·1	27·5	26·9	26·3	25·8	25·3	24·8
10600	29·5	29·3	28·6	28·0	27·4	26·8	26·2	25·7	25·2
10800	30·0	29·8	29·1	28·5	27·9	27·3	26·7	26·2	25·7
11000	30·6	30·3	29·6	29·0	28·4	27·8	27·2	26·6	26·1
11200	31·1	30·8	30·1	29·5	28·9	28·3	27·7	27·1	26·6
11400	31·6	31·3	30·6	30·0	29·3	28·7	28·2	27·6	27·0
11600	32·1	31·8	31·1	30·4	29·8	29·2	28·6	28·0	27·5
11800	32·6	32·3	31·6	30·9	30·2	29·6	29·0	28·5	27·9
12000	33·1	32·8	32·1	31·4	30·8	30·1	29·5	28·9	28·4

PART II. (B.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	3° 50′	3° 55′	4° 0′	4° 5′	4° 10′	4° 15′	4° 20′	4° 25′	4° 30′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
6000	14·3	14·0	13·7	13·4	13·2	12·9	12·7	12·5	12·3
6200	14·8	14·5	14·2	13·9	13·6	13·3	13·1	12·9	12·7
6400	15·2	14·9	14·6	14·3	14·0	13·8	13·5	13·3	13·0
6600	15·7	15·4	15·1	14·8	14·5	14·2	14·0	13·7	13·5
6800	16·1	15·8	15·5	15·2	14·9	14·6	14·3	14·1	13·9
7000	16·6	16·2	15·9	15·6	15·3	15·0	14·8	14·5	14·3
7200	17·1	16·7	16·3	16·0	15·7	15·4	15·1	14·9	14·6
7400	17·5	17·1	16·8	16·5	16·2	15·9	15·6	15·3	15·1
7600	17·9	17·6	17·2	16·9	16·6	16·3	16·0	15·7	15·4
7800	18·4	17·9	17·7	17·3	17·0	16·7	16·4	16·1	15·9
8000	18·8	18·5	18·1	17·8	17·4	17·1	16·8	16·5	16·2
8200	19·3	18·9	18·6	18·2	17·9	17·5	17·2	16·9	16·6
8400	19·8	19·4	19·0	18·6	18·3	18·0	17·6	17·3	17·0
8600	20·2	19·8	19·5	19·1	18·7	18·4	18·1	17·7	17·4
8800	20·6	20·2	19·8	19·5	19·1	18·8	18·4	18·1	17·8
9000	21·1	20·7	20·3	19·9	19·5	19·2	18·9	18·5	18·2
9200	21·6	21·1	20·7	20·3	19·9	19·6	19·3	19·0	18·6
9400	22·0	21·6	21·2	20·7	20·3	20·0	19·7	19·3	19·0
9600	22·4	22·0	21·6	21·2	20·8	20·4	20·0	19·7	19·4
9800	22·9	22·4	22 0	21·6	21·2	20·8	20·5	20·1	19·8
10000	23·4	22·9	22·4	22·0	21·6	21·2	20·8	20·5	20·1
10200	23·8	23·4	22·9	22·5	22·1	21·7	21·3	20·9	20·6
10400	24·3	23·8	23·3	22·9	22·5	22·1	21·7	21·3	20 9
10600	24·7	24·3	23·8	23·3	22·9	22·5	22·1	21·7	21·3
10800	25·2	24·7	24·2	23·7	23·3	22·9	22·5	22·1	21·7
11000	25·6	25·1	24 6	24·2	23·7	23·3	22·9	22·5	22·1
11200	26·1	25·6	25·1	24·6	24·1	23·7	23·3	22·9	22·5
11400	26·5	26·0	25·5	25·0	24·5	24·1	23·7	23·3	22·9
11600	26·9	26·4	26·0	25·5	25·0	24·5	24·0	23·6	23·2
11800	*27·4*	*26·8*	26·3	25·9	25·4	24·9	24·5	24·0	23·6
12000	*27·8*	*27·3*	26·8	26·3	25·8	25·4	24·9	24·5	24·0

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	4° 35′	4° 40′	4° 45′	4° 50′	4° 55′	5° 0′	5° 10′	5° 20′	5° 30′
	m.	m.	m	m.	m.	m.	m.	m.	m.
6000	12·1	11·9	11·7	11·5	11·3	11·1	10·7	10·4	10·1
6200	12·4	12·2	12·0	11·8	11·6	11·5	11·1	10·8	10·5
6400	12·8	12·6	12·4	12·2	12·0	11·8	11·5	11·1	10·8
6600	13·2	13·0	12·8	12·6	12·4	12·2	11·8	11·4	11·1
6800	13·7	13·4	13·1	12·9	12·7	12·5	12·1	11·8	11·5
7000	14·0	13·8	13·5	13·3	13·1	12·9	12·5	12·1	11·8
7200	14·4	14·1	13·9	13·6	13·4	13·2	12·8	12·5	12·1
7400	14·8	14·5	14·3	14·1	13·8	13·6	13·2	12·8	12·4
7600	15·2	14·9	14·6	14·4	14·2	13·9	13·5	13·1	12·7
7800	15·6	15·3	15·0	14·8	14·5	14·3	13·9	13·4	13·0
8000	16·0	15·7	15·4	15·1	14·9	14·7	14·2	13·8	13·3
8200	16·3	16·1	15·8	15·6	15·3	15·1	14·6	14·1	13·7
8400	16·7	16·4	16·2	15·9	15·7	15·4	14·9	14·4	14·0
8600	17·1	16·8	16·5	16·3	16·0	15·8	15·3	14·8	14·3
8800	17·5	17·2	16·9	16·6	16·4	16·1	15·6	15·2	14·8
9000	18·1	17·6	17·3	17·0	16·8	16·5	16·0	15·5	15·1
9200	18·3	18·0	17·7	17·4	17·1	16·8	16·3	15·9	15·4
9400	18·7	18·4	18·1	17·8	17·5	17·2	16·6	16·1	15·7
9600	19·1	18·7	18·4	18·1	17·8	17·5	17·0	16·5	16·0
9800	19·5	19·1	18·8	18·5	18·1	17·9	17·3	16·8	16·4
10000	19·8	19·5	19·2	18·8	18·5	18·2	17·7	17·2	16·7
10200	20·3	19·9	19·5	19·2	18·9	18·6	18·0	17·5	17·0
10400	20·6	20·3	19·9	19·5	19·2	18·9	18·4	17·9	17·4
10600	20·9	20·6	20·3	20·0	19·6	19·3	18·7	18·1	17·8
10800	21·3	20·9	20·6	20·3	20·0	19·6	19·0	18·5	18·0
11000	21·7	21·4	21·0	20·7	20·3	20·0	19·4	18·8	18·3
11200	22·1	21·7	21·4	21·0	20·7	20·3	19·7	19·2	18·6
11400	22·5	22·1	21·7	21·4	21·0	20·7	20·1	19·5	19·0
11600	22·9	22·5	22·1	21·7	21·4	21·0	20·4	19·8	19·3
11800	23·2	22·9	22·5	22·1	21·7	21·4	20·7	20·1	19·6
12000	23·6	23·2	22·9	22·5	22·1	21·8	21·1	20·4	19·9

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	5° 40′	5° 50′	6° 0′	6° 10′	6° 20′	6° 30′	6° 40′	6° 50′	7° 0′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
6000	9·8	9·6	9·3	9·1	8·8	8·6	8·4	8·2	8·0
6200	10·2	10·0	9·7	9·3	9·1	8·9	8·7	8·4	8·2
6400	10·5	10·2	9·9	9·5	9·3	9·1	8·9	8·7	8·5
6600	10·8	10·5	10·2	9·8	9·6	9·4	9·2	9·0	8·8
6800	11·1	10·8	10·5	10·2	10·0	9·7	9·4	9·2	9·0
7000	11·5	11·1	10·8	10·5	10·3	10·0	9·8	9·5	9·3
7200	11·8	11·5	11·1	10·8	10·6	10·3	10·0	9·8	9·5
7400	12·1	11·8	11·4	11·1	10·9	10·6	10·3	10·0	9·8
7600	12·4	12·0	11·7	11·4	11·2	10·9	10·6	10·3	10·0
7800	12·7	12·3	12·0	11·6	11·5	11·2	10·9	10·6	10·3
8000	13·0	12·6	12·3	11·9	11·8	11·5	11·2	10·9	10·6
8200	13·3	13·0	12·6	12·2	12·0	11·7	11·4	11·1	10·8
8400	13·6	13·2	12·9	12·5	12·2	12·0	11·7	11·4	11·1
8600	13·9	13·6	13·2	12·8	12·5	12·2	12·0	11·6	11·3
8800	14·3	13·9	13·5	13·1	12·8	12·5	12·2	12·0	11·6
9000	14·7	14·2	13·8	13·4	13·1	12·8	12·5	12·2	11·9
9200	15·0	14·6	14·1	13·7	13·4	13·1	12·8	12·5	12·2
9400	15·3	14·9	14·4	14·0	13·7	13·3	13·0	12·7	12·4
9600	15·6	15·2	14·8	14·3	14·0	13·7	13·3	13·0	12·7
9800	15·9	15·5	15·1	14·7	14·3	14·0	13·6	13·3	13·0
10000	16·3	15·8	15·4	15·0	14·6	14·2	13·9	13·6	13·3
10200	16·6	16·1	15·7	15·2	14·9	14·5	14·1	13·8	13·5
10400	16·9	16·4	15·9	15·5	15·2	14·8	14·4	14·0	13·7
10600	17·2	16·7	16·2	15·7	15·5	15·0	14·6	14·3	14·0
10800	17·5	17·0	16·5	16·0	15·7	15·4	15·0	14·6	14·2
11000	17·8	17·3	16·8	16·3	16·0	15·6	15·2	14·9	14·5
11200	18·1	17·6	17·1	16·6	16·2	15·8	15·5	15·1	14·7
11400	18·4	17·9	17·4	16·9	16·5	16·1	15·7	15·4	15·0
11600	18·7	18·2	17·7	17·2	16·8	16·4	16·0	15·6	15·2
11800	*19·1*	18·5	18·0	17·5	17·1	16·6	16·2	15·9	15·5
12000	*19·4*	18·9	18·3	17·8	17·4	17·0	16·5	16·1	15·7

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	7° 10′	7° 20′	7° 30′	7° 40′	7° 50′	8° 0′	8° 10′	8° 20′	8° 30′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
6000	7·8	7·6	7·5	7·3	7·2	7·0			
6200	8·0								
6400	8·3	8·1							
6600	8·6	8·4	8·2	8·0					
6800	8·8	8·6	8·4	8·3	8·1				
7000	9·1	8·9	8·7	8·5	8·4	8·2	8·0		
7200	9·3	9·2	9·0	8·7	8·5	8·4	8·2	8.0	
7400	9·6	9·4	9·2	9·0	8·8	8·6	8·4	8·3	8·1
7600	9·8	9·6	9·4	9·2	9·0	8·8	8·6	8·4	8·3
7800	10·1	9·9	9·7	9·5	9·2	9·0	8·8	8·7	8·5
8000	10·3	10·1	9·9	9·7	9·5	9·2	9·0	8·8	8·7
8200	10·6	10·4	10·1	9·9	9·7	9·5	9·3	9·1	8·9
8400	10·8	10·6	10·4	10·1	9·9	9·7	9·5	9·3	9·1
8600	11·1	10·8	10·6	10·4	10·1	9·9	9·7	9·5	9·3
8800	11·3	11·1	10·8	10·6	10·4	10·1	9·9	9·7	9·5
9000	11·6	11·4	11·1	10·9	10·6	10·4	10·2	10·0	9·8
9200	11·9	11·6	11·4	11·1	10·9	10·7	10·5	10·2	10·0
9400	12·2	11·9	11·6	11·4	11·1	10·9	10·7	10·5	10·2
9600	12·4	12·1	11·9	11·6	11·4	11·1	10·9	10·7	10·5
9800	12·7	12·4	12·1	11·9	11·6	11·4	11·1	10·9	10·7
10000	13·0	12·7	12·4	12·1	11·8	11·6	11·4	11·1	10·9
10200	13·2	12·9	12·7	12·4	12·1	11·8	11·5	11·3	11·1
10400	13·5	13·2	12·9	12·6	12·3	12·1	11·8	11·5	11·3
10600	13·7	13·4	13·1	12·8	12·5	12·2	12·0	11·6	11·5
10800	13·9	13·6	13·3	13·0	12·7	12·4	12·1	11·9	11·7
11000	14·1	13·8	13·5	13·2	12·9	12·6	12·4	12·1	11·9
11200	14·4	14·1	13·8	13·5	13·2	12·9	12·6	12·4	12·1
11400	14·6	14·3	14·0	13·7	13·4	13·1	12·9	12·6	12·4
11600	14·9	14·5	14·2	14·0	13·7	13·4	13·1	12·8	12·6
11800	15·1	14·8	14·5	14·2	13·9	13·6	13·3	13·0	12·8
12000	15·4	15·0	14·7	14·5	14·2	13·9	13·6	13·3	13·0

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	8° 40′	8° 50′	9° 0′	9° 20′	9° 40′	10° 0′	10° 20′	10° 40′	11° 0′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
9400	10·0								
9600	10·2	10·0							
9800	10·5	10·3	10·1						
10000	10·7	10·5	10·3	10·0					
10200	10·9	10·7	10·5	10·2					
10400	11·1	10·9	10·7	10·4	10·0				
10600	11·3	11·1	10·9	10·5	10·2				
10800	11·5	11·3	11·1	10·7	10·3	10·0			
11000	11·7	11·5	11·3	10·9	10·5	10·2			
11200	11·9	11·7	11·5	11·1	10·7	10·3	10·1		
11400	12·1	11·9	11·7	11·3	10·9	10·5	10·2		
11600	12·4	12·1	11·9	11·5	11·1	10·7	10·3	10·0	
11800	12·6	12·4	12·1	11·7	11·3	10·9	10·5	10·2	
12000	12·8	12·6	12·4	11·9	11·5	11·1	10·7	10·3	10·0

PART II. (c).

HEIGHTS FROM 12,500 TO 18,000 FEET.

DISTANCES FROM FOURTEEN TO ONE HUNDRED MILES.

PART II. (c.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 20′	0° 21′	0° 22′	0° 23′	0° 24′	0° 25′	0° 26′	0° 27′	0° 28′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
12,500	100·4	99·6	98·8	97·9	97·0	96·2	95·5	94·8	93·9
13,000					99·6	98·6	97·9	97·1	96·4
13,500							100·0	99·2	98·4
14,000									
14,500									
15,000									
15,500									
16,000									
16,500									
17,000									
17,600									
18,000									

PART II. (c.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 29′	0° 30′	0° 31′	0° 32′	0° 33′	0° 34′	0° 35′	0° 36′	0° 37′
12,500	m. 93·1	m. 92·4	m. 91·7	m. 91·0	m. 90·3	m. 89·6	m. 88·8	m. 88·1	m. 87·4
13,000	95·6	94·8	94·0	93·3	92·5	91·8	91·1	90·4	89·7
13,500	97·6	96·8	96·1	95·3	94·6	93·8	93·1	92·4	91·7
14,000	100·0	99·2	98·4	97·7	96·9	96·2	95·5	94·8	94·0
14,500				99·8	99·0	98·2	97·4	96·7	96·0
15,000						100·2	99·5	98·8	98·1
15,500									100·1
16,000									
16,500									
17,000									
17,600									
18,000									

PART II. (c.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 38′	**0° 39′**	**0° 40′**	**0° 41′**	**0° 42′**	**0° 43′**	**0° 44′**	**0° 45′**	**0° 46′**
	m.	m.	m.	m.	m.	m.	m.	m.	m.
12,500	86·7	86·0	85·4	84·7	84·0	83·3	82·7	82·0	81·4
13,000	89·0	88·3	87·6	86·9	86·2	85·5	84·9	84·2	83·6
13,500	91·0	90·3	89·6	89·0	88·4	87·7	87·1	86·4	85·8
14,000	93·3	92·6	92·0	91·2	90·5	89·8	89·2	88·5	87·9
14,500	95·3	94·7	93·9	93·1	92·7	92·0	91·3	90·6	90·0
15,000	97·4	96·7	96·0	95·3	94·8	94·0	93·3	92·6	91·9
15,500	99·4	98·7	98·0	97·2	96·8	96·1	95·4	94·7	94·0
16,000			100·0	99·2	98·5	97·8	97·2	96·6	96·0
16,500						99·9	99·2	98·6	98·0
17,000								100·4	99·8
17,600									
18,000									

PART II. (c.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 47′	0° 48′	0° 49′	0° 50′	0° 51′	0° 52′	0° 53′	0° 54′	0° 55′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
12,500	80·7	80·2	79·5	78·9	78·2	77·7	77·1	76·5	75·9
13,000	82·7	82·3	81·7	81·1	80·5	79·9	79·3	78·7	78·1
13,500	85·1	84·5	83·8	83·2	82·6	82·0	81·4	80·8	80·2
14,000	87·2	86·5	85·9	85·3	84·6	84·0	83·4	82·8	82·2
14,500	89·3	88·7	88·0	87·4	86·7	86·1	85·5	84·9	84·3
15,000	91·3	90·7	90·0	89·4	88·7	88·1	87·4	86·8	86·2
15,500	93·3	92·7	92·0	91·4	90·7	90·1	89·5	88·9	88·2
16,000	95·3	94·6	94·0	93·4	92·7	92·1	91·4	90·8	90·2
16,500	97·3	96·6	95·9	95·3	94·6	94·0	93·3	92·7	92·1
17,000	99·1	98·4	97·7	97·0	96·4	95·8	95·1	94·5	93·8
17,600				99·6	98·9	98·3	97·6	97·0	96·3
18,000							99·1	98·4	97·8

PART II. (c.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	0° 56′	0° 57′	0° 58′	0° 59′	1° 0′	1° 1′	1° 2′	1° 3′	1° 4′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
12,500	75·3	74·7	74·2	73·6	73·1	72·5	72·0	71·4	70·9
13,000	77·5	76·9	76·3	75·7	75·2	74·6	74·1	73·5	73·0
13,500	79·6	79·0	78·4	77·8	77·3	76·7	76·1	75·6	75·1
14,000	81·6	81·0	80·4	79·8	79·3	78·7	78·2	77·6	77·1
14,500	83·7	83·1	82·5	81·9	81·3	80·7	80·2	79·6	79·1
15,000	85·6	85 1	84·5	83·9	83·3	82·6	82·1	81·6	81·0
15,500	87·6	87·0	86·4	85·8	85·2	84·6	84·1	83·5	83·0
16,000	89·6	89·0	88·3	87·7	87·2	86·6	86·0	85·4	84·8
16,500	91·5	90·9	90·3	89·7	89·1	88·5	87·9	87·3	86·7
17,000	93·2	92·6	92·0	91·4	90·7	90·1	89·6	89·0	88·5
17,600	95·7	95·0	94·4	93·8	93·2	92·6	92·0	91·4	90·8
18,000	*97·2*	96·6	95·9	95·3	94·6	94·0	93·4	92·9	92·3

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	1° 5′	1° 6′	1° 7′	1° 8′	1° 10′	1° 12′	1° 14′	1° 16′	1° 18′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
12,500	70·4	69·9	69·4	68·9	67·9	66·9	65·9	65·0	64·0
13,000	72·5	72·0	71·5	71·0	70·0	69·0	68·0	67·0	66·1
13,500	74·5	74·0	73·5	73·0	71·9	70·9	69·9	69·0	68·0
14,000	76·5	76·0	75·5	75·0	73·9	72·8	71·8	70·9	70·0
14,500	78·5	78·0	77·5	77·0	75·8	74·8	73·8	72·8	71·9
15,000	80·4	79·8	79·3	78·5	77·7	76·7	75·7	74·7	73·7
15,500	82·4	81·8	81 2	80·7	79·6	78·6	77·6	76·6	75·6
16,000	84·2	83·7	83·1	82·6	81·5	80·4	79·4	78·4	77·4
16,500	86·1	85·6	85·0	84·5	83·4	82·3	81·2	80·2	79·2
17,000	87·9	87·3	86·7	86·2	85·1	84·0	83·0	82·0	80·9
17,600	90·2	89·7	89·1	88·5	87·4	86·3	85·2	84·2	83·1
18,000	91·7	91·1	90·6	90·0	88·8	87·7	86·6	85·5	84·5

PART II. (c.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	1° 20′	1° 22′	1° 24′	1° 26′	1° 28′	1° 30′	1° 32′	1° 34′	1° 36′
	m.	m.	m	m.	m.	m.	m.	m.	m.
12,500	63·2	62·3	61·5	60·6	59·8	59·0	58·2	57·5	56·7
13,000	65·2	64·3	63·4	62·6	61·7	60·9	60·1	59·3	58·5
13,500	67·1	66·2	65·3	64·5	63·6	62·8	61·9	61·1	60·3
14,000	69·0	68·1	67·2	66·3	65·5	64·6	63·8	63·0	62·2
14,500	70·9	70·0	69·1	68·2	67·3	66·4	65·6	64·8	64·0
15,000	72·7	71·8	70·9	70·0	69·1	68·2	67·3	66·5	65·7
15,500	74·6	73·6	72·7	71·8	70·9	70·0	69·1	68·2	67·4
16,000	76·4	75·4	74·5	73·5	72·6	71·7	70·9	70·0	69·1
16,500	78·2	77·2	76·2	75·3	74·4	73·5	72·6	71·7	70·8
17,000	79·9	79·0	78·0	77·0	76·1	75·2	74·3	73·4	72·6
17,600	82·1	81·1	80·1	79·1	78·2	77·2	76·3	75·4	74·6
18,000	*83·5*	*82·5*	81·5	80·5	79·5	78·6	77·7	76·8	75·9

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	1° 38′	° 40′	1° 42′	1° 44′	1° 46′	1° 48′	1° 50′	1° 52′	1° 54′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
12,500	56·0	55·3	54·6	53·9	53·2	52·5	51·9	51·3	50·7
13,000	57·8	57·1	56·4	55·7	55·0	54·3	53·7	53·0	52·4
13,500	59·6	58·8	58·1	57·4	56·7	56·0	55·3	54·7	54·1
14,000	61·4	60·7	59·9	59·2	58·5	57·7	57·0	56·3	55·7
14,500	63·2	62·4	61·7	60·9	60·2	59·5	58·8	58·1	57·4
15,000	64·9	64·1	63·3	62·6	61·8	61·1	60·4	59·7	59·0
15,500	66·6	65·8	65·0	64·3	63·5	62·8	62·0	61·3	60·6
16,000	68·3	67·5	66·7	65·9	65·1	64·4	63·7	62·9	62·2
16,500	70·0	69·2	68·4	67·6	66·8	66·0	65·3	64·5	63·8
17,000	71·7	70·8	70·0	69·2	68·4	67·6	66·9	66·1	65·4
17,600	73·7	72·9	72·0	71·2	70·4	69·6	68·8	68·0	67·3
18,000	75·0	74·1	73·3	72·5	71·7	70·9	70·1	69·3	68·5

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	1° 56′	1° 58′	2° 0′	2° 2′	2° 4′	2° 6′	2° 8′	2° 10′	2° 12′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
12,500	50·0	49·4	48·8	48·3	47·7	47·2	46·7	46·1	45·5
13,000	51·7	51·1	50·5	50·0	49·3	48·7	48·2	47·7	47·1
13,500	53·4	52·8	52·2	51·6	51·0	50·4	49·8	49·3	48·7
14,000	55·0	54·4	53·8	53·2	52·6	52·0	51·4	50·8	50·3
14,500	56·7	56·1	55·4	54·8	54·2	53·6	53·0	52·4	51·8
15,000	58·3	57·6	57·0	56·4	55·7	55·1	54·5	53·9	53·3
15,500	59·9	59·2	58·6	57·9	57·3	56·7	56·1	55·5	54·9
16,000	61·5	60·8	60·1	59·5	58·8	58·2	57·6	57·0	56·3
16,500	63·1	62·4	61·7	61·0	60·3	59·7	59·1	58·5	57·8
17,000	64·7	64·0	63·2	62·5	61·8	61·2	60·6	60·0	59·3
17,600	66·6	65·8	65·1	64·4	63·8	63·1	62·4	61·7	61·1
18,000	*67·8*	67·1	66·4	65·7	65·0	64·3	63·6	62·9	62·2

PART II. (c.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	2° 14′	2° 16′	2° 18′	2° 20′	2° 22′	2° 24′	2° 26′	2° 28′	2° 30′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
12,500	45·0	44·6	44·1	43·6	43·1	42·6	42·2	41·8	41·3
13,000	46·6	46·1	45·6	45·1	44·6	44·1	43·7	43·2	42·8
13,500	48·2	47·5	47·2	46·7	46·2	45·7	45·2	44·7	44·2
14,000	49·8	49·2	48·6	48·1	47·6	47·1	46·6	46·2	45·7
14,500	51·3	50·7	50·2	49·7	49·2	48·6	48·1	47·6	47·2
15,000	52·8	52·2	51·6	51·1	50·6	50·1	49·5	49·0	48·5
15,500	54·3	53·7	53·1	52·6	52·0	51·5	51·0	50·5	50·0
16,000	55·7	55·2	54·6	54·0	53·4	52·9	52·4	51·9	51·4
16,500	57·2	56·6	56·1	55·5	54·9	54·3	53·8	53·3	52·8
17,000	58·7	58·1	57·5	56·9	56·3	55·8	55·2	54·7	54·1
17,600	60·5	59·9	59·3	58·7	58·1	57·5	56·9	56·4	55·8
18,000	61·6	61·0	60·4	59·8	59·2	58·6	58·1	57·5	56·9

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	2° 32′	2° 34′	2° 36′	2° 38′	2° 40′	2° 42′	2° 44′	2° 46′	2° 48′
12,500	m. 40·9	m. 40·5	m. 40·1	m. 39·6	m. 39·2	m. 38·8	m. 38·5	m. 38·1	m. 37·7
13,000	42·4	42·0	41·5	41·1	40·7	40·3	39·9	39·5	39·1
13,500	43·8	43·4	42·9	42·5	42·1	41·7	41·3	40·9	40·5
14,000	45·2	44·7	44·3	43·9	43·5	43·0	42·6	42·2	41·8
14,500	46·7	46·2	45·7	45·3	44·8	44·4	44·0	43·6	43·2
15,000	48·1	47·6	47·1	46·6	46·2	45·7	45·3	44·9	44·5
15,500	49·5	49·0	48·5	48·0	47·6	47·1	46·7	46·2	45·8
16,000	50·9	50·4	49·9	49·4	48·9	48·4	48·0	47·6	47·1
16,500	52·3	51·8	51·3	50·8	50·3	49·8	49·3	48·9	48·4
17,000	53·6	53·1	52·6	52·1	51·6	51·1	50·7	50·2	49·7
17,600	55·3	54·8	54·3	53·7	53·2	52·7	52·2	51·7	51·3
18,000	*56·4*	55·9	55·4	54·9	54·3	53·8	53·3	52·8	52·3

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	2° 50′	2° 52′	2° 54′	2° 56′	2° 58′	3° 0′	3° 2′	3° 4′	3° 6′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
12,500	37·3	37·0	36·7	36·3	36·0	35·6	35·3	35·0	34·7
13,000	38·8	38·4	38·0	37·6	37·3	36·9	36·6	36·3	36·0
13,500	40·1	39·7	39·3	38·9	38·6	38·2	37·9	37·5	37·2
14,000	41·4	41·0	40·6	40·2	39·9	39·5	39·2	38·8	38·5
14,500	42·8	42·4	42·0	41·6	41·2	40·8	40·5	40·1	39·8
15,000	44·1	43·7	43·2	42·8	42·5	42·1	41·7	41·3	41·0
15,500	45·4	45·0	44·5	44·1	43·7	43·4	43·0	42·6	42·2
16,000	46·7	46·2	45·8	45·4	45·0	44·6	44·2	43·8	43·4
16,500	48·0	47·5	47·1	46·7	46·3	45·9	45·5	45·1	44·7
17,000	49·3	48·9	48·4	48·0	47·5	47·1	46·7	46·3	45·9
17,600	50·8	50·4	49·9	49·5	49·0	48·6	48·2	47·8	47·4
18,000	51·9	51·4	51·0	50·5	50·1	49·6	49·2	48·7	48·3

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	3° 8′	3° 10′	3° 15′	3° 20′	3° 25′	3° 30′	3° 35′	3° 40′	3° 45′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
12,500	34·3	34·0	33·3	32·6	31·9	31·2	30·6	30·0	29·4
13,000	35·6	35·3	34·5	33·8	33·1	32·4	31·7	31·1	30·5
13,500	36·9	36·6	35·8	35·0	34·2	33·5	32·8	32·2	31·6
14,000	38·1	37·8	37·0	36·2	35·4	34·7	34·0	33·3	32·7
14,500	39·4	39·1	38·2	37·4	36·6	35·8	35·1	34·4	33·8
15,000	40·6	40·2	39·3	38·5	37·8	37·0	36·3	35·6	34·9
15,500	41·8	41·5	40·6	39·8	38·9	38·1	37·4	36·7	36·0
16,000	43·0	42·7	41·8	40·9	40·1	39·3	38·5	37·8	37·1
16,500	44·3	44·0	43·0	42·1	41·2	40·4	39·6	38·9	38·1
17,000	45·5	45·1	44·2	43·3	42·4	41·6	40·8	40·0	39·2
17,600	47·0	46·6	45·6	44·7	43·8	42·9	42·1	41·3	40·5
18,000	*47·9*	47·5	46·5	45·6	44·7	43·8	43·0	42·2	41·4

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	3° 50′	3° 55′	4° 0′	4° 5′	4° 10′	4° 15′	4° 20′	4° 25′	4° 30′
12,500	m. 28·9	m. 28·3	m. 27·8	m. 27·3	m. 26·8	m. 26·3	m. 25·9	m. 25·4	m. 25·0
13,000	30·0	29·4	28·9	28·3	27·8	27·3	26·8	26·3	25·9
13,500	31·0	30·5	30·0	29·3	28·8	28·3	27·8	27·3	26·9
14,000	32·1	31·6	31·0	30·4	29·8	29·3	28·9	28·4	27·9
14,500	33·1	32·6	32·0	31·4	30·8	30·2	29·8	29·3	28·8
15,000	34·2	33·6	33·0	32·4	31·8	31·2	30·7	30·2	29·7
15,500	35·3	34·6	34·0	33·4	32·8	32·2	31·7	31·1	30·6
16,000	36·4	35·7	35·1	34·4	33·8	33·2	32·7	32·1	31·6
16,500	37·4	36·7	36·1	35·4	34·8	34·2	33·6	33·0	32·5
17,000	38·5	37·8	37·1	36·4	35·8	35·2	34·6	34·0	33·5
17,600	39·7	39·0	38·3	37·6	37·0	36·3	35·7	35·1	34·6
18,000	40·6	39·9	39·2	38·5	37·8	37·1	36·5	35·9	35·3

PART II. (c.)

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	4° 35′	4° 40′	4° 45′	4° 50′	4° 55′	5° 0′	5° 10′	5° 20′	5° 30′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
12,500	24·5	24·1	23·7	23·4	23·0	22·6	22·0	21·3	20·6
13,000	25·4	25·0	24·6	24·3	23·9	23·5	22·8	22·2	21·5
13,500	26·4	26·0	25·6	25·1	24·7	24·3	23·6	22·9	22·2
14,000	27·4	26·9	26·5	26·1	25·6	25·2	24·5	23·7	23·0
14,500	28·3	27·8	27·3	26·9	26·5	26·1	25·3	24·5	23·8
15,000	29·2	28·7	28·2	27·8	27·4	27·0	26·1	25·3	24·6
15,500	30·1	29·5	29·1	28·7	28·2	27·8	26·9	26·1	25·4
16,000	31·0	30·6	30·1	29·6	29·1	28·6	27·8	27·0	26·3
16,500	32·0	31·5	31·0	30·5	30·0	29·5	28·6	27·8	27·0
17,000	32·9	32·4	31·9	31·4	30·9	30·4	29·5	28·6	27·8
17,600	34·0	33·5	32·9	32·4	31·9	31·5	30·5	29·6	28·8
18,000	34·7	34·2	33·6	33·1	32·6	32·2	31·2	30·2	29·4

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	5° 40′	5° 50′	6° 0′	6° 10′	6° 20′	6° 30′	6° 40′	6° 50′	7° 0′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
12,500	20·1	19·6	19·0	18·5	18·0	17·6	17·2	16·8	16·4
13,000	20·9	20·3	19·7	19·2	18·8	18·4	18·0	17·5	17·0
13,500	21·6	21·0	20·4	19·9	19·4	19·0	18·6	18·0	17·7
14,000	22·4	21·8	21·2	20·6	20·1	19·6	19·2	18·8	18·4
14,500	23·2	22·5	21·9	21·3	20·7	20·2	19·8	19·4	19·0
15,000	24·0	23·3	22·6	22·0	21·4	20·9	20·4	20·0	19·5
15,500	24·8	24·1	23·4	22·8	22·2	21·7	21·2	20·6	20·1
16,000	25·6	24·9	24·2	23·6	23·0	22·5	22·0	21·3	20·8
16,500	26·3	25·6	24·9	24·3	23·7	23·1	22·6	22·0	21·4
17,000	27·0	26·3	25·6	25·0	24·4	23·8	23·2	22·7	22·1
17,600	28·0	27·2	26·5	25·8	25·2	24·6	24·0	23·3	22·7
18,000	28·6	27·8	27·1	26·4	25·8	25·2	24·6	24·0	23·5

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	7° 10′	7° 20′	7° 30′	7° 40′	7° 50′	8° 0′	8° 10′	8° 20′	8° 30′
	m.	m.	m.	m.	m.	m.	m.	m.	m.
12,500	16·0	15·7	15·5	14·9	14·7	14·4	14·1		
13,000	16·6	16·3	15·9	15·6	15·3	15·0	14·6	14·3	14·0
13,500	17·3	16·9	16·5	16·1	15·8	15·5	15·2	15·0	14·7
14,000	18·0	17·5	17·0	16·6	16·3	15·9	15·6	15·3	15·0
14,500	18·5	18·0	17·5	17·1	16·8	16·4	16·1	15·8	15·5
15,000									
15,500									
16,000	20·4								
16,500	21·0	20·4	20·0						
17,000	21·6	21·1	20·7	20·3					
17,600	22·2	21·8	21·3	20·9	20·4	20·0			
18,000	*22·9*	22·3	21·8	21·4	20·9	20·5	20·1		

Height in Feet.	CORRECTED ANGULAR ALTITUDE OF SUMMIT.								
	8° 40′	8° 50′							
	m.	m.							
12,500									
13,000									
13,500	14·3	14·0							
14,000	14·7	14·5							
14,500	15·2	15·0							
15,000									
15,500									
16,000									
16,500									
17,000									
17,600									
18,000									

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